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THE UNIVERSITY OF ALBERTA

EDUCATIONAL NEEDS OF POST-MYOCARDIAL INFARCTION PATIENTS

BY

© MARIE M. COFFEY

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF NURSING

FACULTY OF NURSING

EDMONTON, ALBERTA
FALL, 1986

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Educational Needs of Post-Myocardial Infarction Patients" submitted by Marie M. Coffey in partial fulfillment of the requirements for the degree of Master of Nursing.

Janet C. Kerr
Supervisor

September 1986

This manuscript is dedicated to my family for their support and encouragement, in particular my mother for her unwavering faith in me and also to Rick for his love and support in the completion of this project.

ABSTRACT

This study examined the learning needs of coronary patients as they are perceived by coronary patients and cardiac nurses involved in the teaching of these patients and identified from whom patients expect to receive instruction and education following myocardial infarction. Respondents were 60 patients admitted to a coronary care unit with a diagnosis of myocardial infarct and 60 nurses who were employed in the coronary care area of two large teaching hospitals in Alberta. Data were collected from both groups using the Cardiac Patients Learning Needs Inventory (CPLNI), a 43-item questionnaire developed by Gerard and Peterson (1984). Patients were also asked to complete the Expected Educator Tool in an attempt to discover by whom they expected to be taught. Data were analyzed using frequencies and percentage distributions, Pearson Product Moment Correlation and factor analysis.

Results revealed that both groups felt that knowing what to do when chest pain occurs and how to decrease the chance of a second heart attack were very important. Neither group felt it important that patients know why the I.V. was in place, what the usual C.C.U. policies and routines were and where the family could learn C.P.R. Patients indicated that knowing what tests would be done to establish a diagnosis was very important, while nurses felt it was not at all important. Patients felt it was quite important to know what causes a heart attack, what happens when a heart attack occurs and how the heart heals, while nurses attached much less important to these items.

Results of the Expected Educator Tool indicated that patients saw physicians as the primary educator in almost every aspect of coronary teaching with the exception of items directly related to nursing care such as the reason for intravenous, usual nursing routines and policies and what to do if chest pain occurs. Generally, nurses were seen as a secondary educator to the physician.

Factor analysis of patient responses identified ten components of learning needs. These factors were quite similar to the eight subscales identified in the original instrument. This finding indicates that this instrument could be a fairly useful measurement of learning needs of coronary patients. However, factor analysis on nurse responses revealed twelve factors which bore very little similarity to the eight subscales of the original instrument indicating that nurses, not surprisingly, perceive learning needs differently from patients.

Additional research is recommended to determine the effects of involving patients in development of these programs on success of educational programs and to explore further the role of nursing and nurses in the education of coronary patients.

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I also wish to acknowledge the cooperation and assistance I received from the nurses working in the coronary care units of the Misericordia Hospital and the Edmonton General Hospital. A very special thank you to Karen Kurceba, coronary teaching nurse, and Wendy Hill, Unit Supervisor, Coronary Care Unit at the Edmonton General Hospital for their invaluable contribution to data collection for this study.

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CHAPTER I

Educational Needs of Post-Myocardial Infarction Patients

Introduction

Patient education has become an accepted part of the treatment of any chronic illness (Kellerman, et al., 1968; Bilodeau & Hackett, 1971; Woodwark & Gauthier, 1972; Stern, et al., 1977; Wallace & Wallace, 1977; Scalzi & Dracup, 1978; Linde & Janz, 1979; Gulldedge, 1979; Wenger, 1979; Gregor, 1981; Murdaugh, 1982; Sivarajan, et al., 1983; Egnew and Jones, 1984). Coronary artery disease (CAD) is a chronic illness and continues to be the number one cause of death in North America. In Canada in 1984 nearly half the nation's deaths were caused by cardiovascular disease. The cardiovascular death total was 80,000 of which nearly 30,000 were from heart attacks (Statistics Canada, 1984). Those who survive the event become the potential targets for post myocardial infarction (MI) patient education programs.

Patient education is not only the right of every patient but it is also of great economic importance. The patient who does not follow a prescribed regimen can incur considerable costs in terms of personal economic resources, those of the community and in terms of additional demands placed on health care resources. Extensive work has been done in an attempt to isolate factors which contribute to the success or failure of patient education programs with little conclusive evidence (Rahe, et al., 1975; Bille, 1977; Pozen et al., 1977; Linde, et al., 1979: Barbarowicz, et al., 1980; Milazzo, 1980; Scalzie, et al., 1980, Stanton, 1983).

Much has been written about the characteristics of the adult learner. According to Knowles (1979) the success of adult education is dependent upon a number of prerequisites including a readiness to learn as well as a perceived need and desire on the learner's part to indeed learn what is being taught. Educational programs have become part of the treatment of MI patients in many centers. However, these programs have been developed by health care workers based on their own assumptions of what these patients need to know to resume self care. Several studies have indicated incongruence between the educational needs of patients as patients perceive them and as health care workers perceive them (Pfistinger, 1975; Lauer, et al., 1982; Goddard and Powers, 1982; and Gerard and Peterson, 1984). It is therefore the intent of the investigator to examine and compare the educational needs of MI patients as perceived by both health care workers and patients.

Background for the Research

For the past four years, the writer has been involved with teaching coronary patients following MI. The content of this program has been based on tradition, an ongoing review of literature in the area and the learning needs of patients as identified by health care workers. Despite a comprehensive, multi-disciplinary approach to patient education, the level of knowledge and compliance of patients six months post MI is consistently unimpressive. This study is designed to examine the learning needs of coronary patients from their perspective as well as from the perspectives of nurses directly involved with their education. Discrepancies here may indicate a greater need for an educational needs assessment for the patient as a basis for the teaching program or for further education of health care workers.

Purpose of the Study

A patient cannot be expected to assume competent self-care unless he or some responsible person possesses sufficient information about all areas of the medical regimen. In an attempt to meet this need for knowledge, teaching programs have been developed to educate patients with coronary artery disease to assist them to return to an optimum level of health and quality of life. The developers of these programs have traditionally used the findings of past research to coordinate the components of their programs. That research has dealt with the therapist's interpretation of the needs of these patients during convalescence from a myocardial infarction. Little consideration has been given to what these patients perceived as important in meeting their educational needs. Without this information, meaningful patient education can only be a 'hit and miss' affair. The purpose of this study therefore is to explore heart attack patients' perceptions of their learning needs and compare and contrast these perceptions with those of nurses involved with patient education and rehabilitation. The researcher, a cardiac nursing specialist, will also identify the category of health care professional from whom the patient expects to receive this information. An awareness of this factor may provide the health care worker with more insight into the educational expectations of the patient. It is hoped that information gained from this research project will be of value to health care workers developing new educational programs for post myocardial infarct patients as well as to those making revisions to programs now in existence.

Objectives of the Study

1. To examine the learning needs of post MI patients from a patient's perspective.
2. To examine the learning needs of post MI patients from the perspective of nurses involved in the care and education of these patients.
3. To identify any areas of incongruence between the perceptions of patient learning needs by nurses and patients themselves.

4. To identify from whom patients expect to receive instruction and educaiton following myocardial infarction.

Definition of Terms

Need: A lack of information wanted or required by an individual.

Myocardial Infarction: An area of myocardial injury as diagnosed by electrocardiographic changes, clinical symptoms and serial cardiac enzymes.

Coronary Care Nurses: Registered nurses who are nursing full-time or part-time in an area of the hospital providing specialized facilities and monitoring equipment for patients admitted following acute myocardial infarction and monitored until transfer to a medical unit.

Self-care: Deliberate actions initiated and performed by an individual by themselves to maintain life, health and well-being (Orem, 1980).

Therapeutic Self-Care Demand: The actions required for an individual to attain self care (Orem, 1980).

Self-Care Agency: The power of individuals to engage in self-care. This power is a complex, acquired human characteristic, a capability for performing actions to (1) determine the kinds of self-care actions that are required; (2) make decisions about engaging in the performance of self-care actions; and (3) the performance of specific self-care actions (Orem, 1980).

Nursing Agency: The specialized knowledge and training of a nurse that allows him or her to diagnose, prescribe and provide care to assist the individual to attain self care (Orem, 1980).

Self-Care Deficit: The relationship between the therapeutic self-care demand and the self-care agency of an individual in which the capabilities for self-care are less than those required for meeting the therapeutic self-care demand (Orem, 1980).

Ethical Considerations

Sixty patient subjects were recruited on a voluntary basis from two hospitals participating in the study. Subjects were free to refuse or withdraw from the study at any time with no consequence to their education or treatment. The study was explained to the subjects and written consent to participate was obtained. Nursing staff employed in the coronary care units of both hospitals were asked to participate on a voluntary basis. The total number of eligible nurses employed between the two institutions was 72. It was hoped to obtain a sample of 60 nurse respondents. Written consent was obtained from the sample of nurses also. Anonymity of patient and nurses was maintained at all times. Consent and approval was obtained from the Research and Ethics Committee of the institutions involved prior to commencement of the study.

Limitations of the Study

It was recognized that perceptions of learning needs of coronary patients will differ between groups of nurses and groups of patients for a variety of reasons. Given that it is nurses, however, who are mainly responsible for the development and delivery of the educational component of cardiac rehabilitation programs for coronary patients, it seemed appropriate to examine and compare these two groups.

CHAPTER II

Review of the Literature

An overview of various frameworks which have been used in the acute care setting will be presented. For this particular study, the self-care framework developed by Orem (1980) was used in combination with the Health Belief Model developed by Hochbaum in 1968 and described by Rosenstock (1974). The rationale for and use of this combination will also be described in the following section. A review of the literature in the areas of adult learning, patient education for heart disease and perceptions of patients' needs will complete this chapter.

Theoretical Background

Several theoretical frameworks have been utilized in research designed to examine the concept of needs of acute care patients and their families. Tuggle (1982) studied the emotional needs of survivors of sudden cardiac arrest from a stress-response framework based on a definition of stress first developed by Selye (1976). Emotional stress was seen as both a contributor to the initial event and a cause of several psychological needs arising following arrest. Rogers (1983) examined the needs of relatives of cardiac surgery patients using the concept of total patient care as described by Hymovich (1974). This framework was based on the assumptions that the family must be part of quality patient care, all individuals are part of some family unit and the family unit is a viable way of life for the majority of the population. Within this framwork, family needs were seen as part of the patient's care. In further studies of family needs Breu and Dracup (1978) and Dracup and Breu (1978) dealt exclusively with spouses of coronary care patients having very grave prognoses utilizing the framework of anticipatory grief (Lindemanne, 1944). Prowse (1983) examined the needs of families of ICU patients using Caplan's medical model of crisis (Caplan, 1964) as well as Narayan and Joslin's nursing model of crisis (Narayan & Joslin, 1980). From these studies, one becomes aware of the variety of suitable frameworks that have been used to examine the concept of needs specific to acute care patients and their families.

There are, however, limitations inherent in the study of patient needs. Williamson (1978) found both conceptual and methodological problems. Researchers identified interviewer variability, differences in pretest and study groups and a considerable time lapse between the pretest and the actual study as potential causes for some of the methodological problems. The main conceptual problem was the interaction between physical and emotional components of needs thus affecting the validity of the need categories. Investigators recognized this close interaction and advocated the necessity of developing items that would accurately reflect the concepts under study and discriminate among them.

Similarily, several theoretical frameworks have been used to explore the purpose and efficacy of educational programs for patients with coronary artery disease. Gregor (1981) examined the teaching of coronary patients using a framework developed by Sullivan (1976). This framework identified four components of the teaching process and applied them to the hospital situation for patient education. Murdock et al. (1981) developed a model for assessing patient education based upon specific patient education criteria formulated by experts in the field, as well as a thorough review of the literature. This model seems more appropriate for development of a program than for assessment of one. Wallace and Wallace (1977) examined the effectiveness of group education after myocardial infarction from a framework of anxiety reaction. Examining the effect of group education from this perspective produced some rather interesting results. Contrary to expectation, anxiety levels of patients who experienced group education were significantly higher than those who had not received such treatment.

While a variety of frameworks have been used to exmaine both the concept of needs and the evaluation of patient education, none have addressed the importance of collaboration between the patient and the health care worker in assessing the educational needs. For this reason, a framework which recognizes patient involvement has been selected for this study. The self-care framework developed by Orem (1980) in combination with the Health Belief Model as described by Kirscht (1974) and Rosenstock (1974) seemed most appropriate.

Conceptual Framework

Orem (1980) distinguishes nursing from other helping professions by its special concern for "man's need for self-care action and the provision and management of it on a continuous basis in order to sustain life and health, recovery from disease or injury and cope with their effects" (pp. 1-2). Orem judges the effectiveness of nursing actions by the degree to which they accomplish or promote the patient's self-care. Self-care is defined as "the practice of activities that individuals personally initiate and perform on their own behalf in maintaining life, health and well-being" (p. 13). An individual's ability to perform self-care is dependent upon many factors including: his knowledge of his disease, its cause and treatment; motivation to participate in self-care; and the skills to perform required activities. Nursing, according to this framework, is indicated when a deficit is identified between the individual's ability to perform self-care and the therapeutic self-care demand. Within this framework, nursing actions for a client are categorized into a specific nursing system depending upon the clients' capabilities and the perceived need for nursing assistance. The education of a client following myocardial infarction within this framework would be categorized as part of the supportive educative system and include a combination of support, guidance, provision of a developmental environment and teaching. According to Orem, this is the only system where a patient's requirements for assistance relate to "decision making, behavior control, and acquiring knowledge and skills" (p. 103).

The concept of education within the self-care framework was discussed by Levin (1978). He differentiated between self-care education and patient education in several ways. According to Levin, patient education is not usually directed toward reducing dependency. Rather, it is based upon the professional's perception of learner needs, choice of teaching strategies and selection of outcome criteria. Most attempts to teach coronary patients are designed around this type of approach. The aim of self-care education, however, is to promote self sufficiency and independence of the patients. It derives its goals from the learner's perceived needs and preferences regardless of whether they conform to professional perceptions of learners needs or not. The role of the health professional in this form of education is provision of adequate information for the patient to make informed choices concerning his health and lifestyle. Would it not seem appropriate then to directly involve the patient in assessing his educational needs?

Most educational programs developed for coronary patients are designed to promote a healthier lifestyle through compliance with prescribed medical regimen and modification or elimination of risk factors known to cause heart disease. This researcher has observed that many of these programs are based upon the nurse's judgement about content to be included rather than upon collaboration with the individual to be taught. The application of the self-care framework to promotion of health, as opposed to dealing with illness, has been documented by Kinlein (1977) for independent nursing practice. Kinlein viewed the self-care practices of the individual as the focus of the nursing process and emphasized the importance of nurses listening to and receiving input from the client regarding his needs. In utilizing the self-care framework to assess the educational needs of myocardial infarction patients it would therefore seem appropriate and indeed necessary to obtain input from the client himself to ensure adequate and accurate assessment.

Moving beyond the identification of needs to rationale for behavior change, the Health Belief Model provides an extension to the self-care framework. This model emphasizes that beliefs held by an individual form the basis for decisions regarding health care. A key element of this motivation is the individual's state of readiness. According to Redman (1976) the individual must have the motivation and readiness to learn before what is being taught becomes meaningful. Readiness arises from an individual's perception of his personal susceptibility to a health problem and his perception of the severity of the consequences of that problem. Another element of this model is the individual's perception of the balance between the benefits of a particular health activity and the cost of that activity. These costs may be actual or anticipated, physical, psychological or economic.

Internal or external cues received by the client which prompt the initiation of health behavior make up a third element of this motivational model. Health motivation arises from the belief that the benefit of a healthy activity outweighs the risks of living with a health deficit. To formulate these health beliefs and to carry out the prescribed regimens, the individual must have some knowledge of the prescribed plan. Knowledge of the specific aspects of the regimen often related significantly to the patient's compliance with that aspect of the program but did not relate to compliance in other areas of treatment (Low, 1970; Malahy, 1966). The Health Belief Model has been applied to cardiac rehabilitation by other researchers and found to be useful in predicting patient involvement in rehabilitative and educative programs (Hijeck, 1984). Motivation to make lifestyle changes varies according to situation. Motivation from an avoidance perspective in order not to get a disease is not as strong as that which occurs after the diagnosis of disease and which is aimed at promotion of optimal recovery and health. Following a heart attack, an individual is highly motivated to maximize his health potential. The role of nursing would then be to provide adequate knowledge and understanding for the patient to make informed choices about his health.

The influence of knowledge on the health beliefs of the individual is a vital issue. For this reason the supportive educative role of the nurse described in Orem's self-care framework would seem to articulate well with the Health Belief Model of behavior change based on education causing the patient to be motivated to alter his/her lifestyle in order to promote health. The four categories of the Health Belief Model, perceived susceptibility to disease, perceived severity of disease, perceived benefits of and barriers to preventive care and cues to action, incorporate the patients health attitudes, beliefs, current situation and psychological factors. Combined with the collaborative approach of the self-care framework of Orem, one sees the rationale for lifestyle change due to disease and the role of nursing in providing necessary knowledge to facilitate this change (see Figure 1, p. 16).

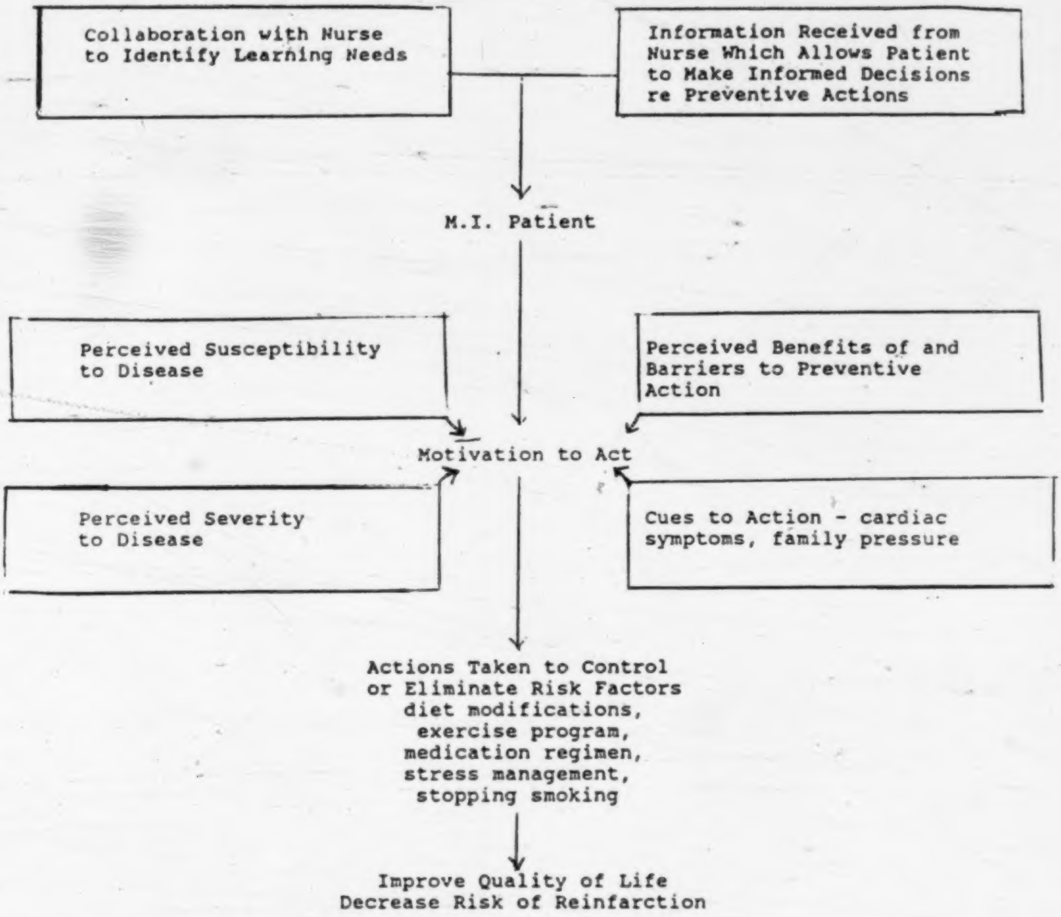
Collaboration with Nurse to Identify Learning Needs
Information Received from Nurse Which Allows Patient to Make Informed Decisions re Preventive Actions
M.I. Patient
Perceived Susceptibility to Disease
Perceived Benefits of and Barriers to Preventive Action
Motivation to Act
Perceived Severity to Disease
Cues to Action - cardiac symptoms, family pressure
Actions Taken to Control or Eliminate Risk Factors diet modifications, exercise program, medication regimen, stress management, stopping smoking
Improve Quality of Life Decrease Risk of Reinfarction

Figure 1. Motivation to Self Care

Adapted from Orem's Self Care Framework and Hochbaum's Health Belief Model.

A brief overview of what has been written about the characteristics of the adult learner, patient education for heart disease patients, and perceptions of patient needs is presented below.

Characteristics of the Adult Learner

Since the vast majority of sufferers of coronary artery disease are adults, an in depth look at the education of this group should include a review of the writing on the adult learner. In reviewing the literature on androgogy, this researcher found four basic assumptions considered when discussing the adult learner. The first assumption as outlined by Malcolm Knowles (1979) holds that as a person matures, his self-concept moves from a state of dependence to a state of increasing self-directed independence. Those who enter a professional school or commence a career are already identified with the adult role and have a need to be seen as self-directing. Individuals embarking upon a program of health education would have the same need. Should the adult not be allowed to be self-directing, resentment and resistance will prevail and interfere with the process of learning. Authorities agree that self-directed learning is a necessary feature of adult education. Dewey identifies self-direction in learning as the true growth of the individual (Burns, 1980). Whitehead (1964) reaffirms this view when he states that the purpose of education for the adult learner is to stimulate and guide self development. Rogers (1960) states "I have come to feel that the only learning which significantly influences behavior is self-discovered, self appropriated" (p. 153). The skills of self-direction can be acquired by appropriate guidance from the instructor and effective role modeling. The role of the instructor is to provide the necessary support in the transition from dependence to independence. The instructor serves as a facilitator in self-directed learning. Burns (1980) concludes that such a situation will reduce learner frustration and provide positive reinforcement necessary in shaping self-directed behavior. In applying this assumption to the education of the coronary patient, one sees the rationale for obtaining input from the individual in assessing his learning needs if learning is ever to take place.

According to the second assumption, as a person matures he acquires a reservoir of knowledge based on past experience. New learning should be built on these unique experiences (Knowles, 1979). This emphasizes the need for individualized learning. If life experiences are ignored or devalued, the adult learner takes it personally and feels rejected as a person. In his discussion on self-care education, Levin (1978) also relies on knowledge and skills the individual already possess. His contention is that self-care should be built on those current lay practices and be supplemented with medical-technical concepts, strategies and skills to fill in deficits in knowledge needed to make informed decisions concerning health care.

The third assumption of androgogy is that biological development is complete and the adult is motivated to learn tasks related to occupational or social role. Adults are ready to learn the things they need to know and learning experiences should coincide with their learning needs (Knowles, 1979). This concept of readiness and desire to learn new roles is particularly appropirate with the individual who has recently experienced a heart attack. As he assumes the sick roles and begins to move toward a state of health he will need information on his disease and how to prevent or minimize health deficits due to the disease.

The final assumption of androgogy is that adults have a problem-centered orientation to learning and require an immediate and personal application of things learned (Briggs, 1982). This application facilitates retention of material learned and makes it more meaningful to the individual. Meaningfulness is usually achieved when a relationship can be shown between previous learning and the goals and objectives of the new learning experience, or when practical application can be demonstrated. The learner should therefore be encouraged to plan his own educational activities while the teacher or health professional assumes the role of resource person and facilitator. This situation would seem to apply to the person who has had a heart attack. Collaboration between the individual and the health care worker as a resource person in defining learning needs could be an effective start in formulation of an educaitonal program based on indivudal needs. Since the majority of heart attack victims are over the age of 30, they can be considered adults, possessing the characteristics of the adult learner as described here, when placed in the learning situation. It would therefore seem imperative that a readiness to learn and a perceived need and desire to know what is being taught are essential for the success of any educational program.

Patient Education for Heart Disease Patients

The effects of education on knowledge level of heart disease patients has been examined by several researchers from many perspectives. Barbarowicz, et al. (1980) examined the effects of various types of educational media on knowledge scores of patients admitted for coronary artery bypass surgery. They concluded that a slide-sound educational program is superior to conventional methods of patient teaching. Christopherson and Pfeiffer (1980) in studying pre-op teaching found amount of information retained was not related to timing of teaching. They did find that patients who did not receive pre-op written material were in ICU significantly longer and were in hospital longer than those who had read the booklet prior to surgery. This supported previous work by Schmitt and Wooldridge (1973), Lindeman and Van Aernon (1971) and Egbert et al. (1964) that patients with increased information recover more quickly. Scalzi et al. (1980) attempted to evaluate the effectiveness of a structured inpatient education program for coronary patients and concluded that little information presented in the acute phase was retained by patient or family following discharge. The effect of timing on retention of knowledge was further demonstrated in a study by Stevens (1985). Coronary patients in this study who received reinforcement of teaching within six weeks of discharge were found to demonstrate increased knowledge levels when compared to patients who had not received this teaching.

Milazzo (1980) attempted to exmaine the effectiveness of different approaches to teaching. This study compared and contrasted the differences in health knowledge gained through formal and informal teaching. Results indicated that health learners who received formal teaching exhibited greater knowledge than those who received informal teaching. No discussion is given to patient input to the educational program. Sivarajan et al. (1983) studied the effects of a twelve week outpatient teaching and counselling program on 258 myocardial infarct patients and found only limited effectiveness for behavioral change.

Researchers here felt that lack of positive findings could possible be due to the fact that the education was provided in a group approach with little attention paid to individual risk factor strategies or learning needs. They concluded that the program may have been too general to be applicable to the individual patient. It would be interesting to evaluate programs developed in collaboration with the patient based more specifically on his individual needs.

In a study by McKnight Nicklin (1986) the post discharge concerns of medical and surgical patients were monitored by phone. Of 217 phoned concerns received, nearly 44% were assessed significant enough to necessitate directing the patient to an emergency department. Of the post M.I. patients, 37% called back with concerns about management of chest pain, arm numbness, shortness of breath or palpatations while 20% called back with questions concerning their medications. Researchers concluded that additional medication education and advice about prevention and control of chest pain and heart palpatations would be beneficial to cardiac patients prior to discharge. Investigators also felt that a more individualized assessment of learning needs of patients and family would facilitate the rehabilitation process.

Theorell (1983) studied the effects of psychosocial intervention as part of rehabilitation for 143 men following myocardial infarction. Individualized counselling and information were provided to experimental subjects and this group reported fewer negative feelings about their illness and fewer reports of fear of reinfarction than control group subjects. This study would seem to support the need for an individualized approach to cardiac rehabilitation. Mayou (1983) conducted a controlled trial of early rehabilitation after myocardial infarction. One group received conventional treatment, another received exercise training and another received extra advice and all were assessed at twelve weeks. The exercise group were most enthusiastic about their treatment, but there were no differences among groups in mental state, physical activity, or satisfaction with social activities. The researchers again concluded that closer coordination of detailed individual advice would have been helpful. Hoepfel-Harris (1980) attempted to define factors that affect compliance in post MI patients' exercise regimen and identified education, behavior modification and a combination of the two as significant elements. According to Haynes (1976), for therapeutic outcomes educational approaches have been known to achieve a success rate of 50%, while behavioral strategies achieve a rate of 82% and the combined strategies 75%. Little detail is given about the educational program but in view of other results one could question the adequacy of their meeting the knowledge needs of the patients involved. The suggestion was also put forth that more flexible planning of care that can take into account the greater variety of individual problems and needs that are apparent in patients recovering from MI would be useful.

Some studies have been done to examine the characteristics of the educator which affect patient knowledge and compliance with prescribed regimen. Murdaugh (1980) studied the effects of nurse awareness of teaching-learning principles on knowledge of patients in a coronary care unit. Results indicated that nurses had the knowledge but lacked adequate training in teaching-learning principles for patient education. These nurses also listed obstacles to teaching and cited lack of time and emotional unreadiness on the part of the patient. How the nurses defined and assessed emotional readiness was not outlined, but a criticism is that the patient may well be a better indicator of his own level of readiness than the nurses. A previous study done by Linde and Janz (1979) looked at effects of academic preparation of the educator to knowledge level and compliance of patients in a cardiac teaching program. Results showed that staff nurses could influence patient knowledge, but clearly nurses with a masters degree had a much greater impact on patient learning.

It becomes clear that knowledge is an essential prerequisite for compliance but there is no guarantee that knowledge in itself will ensure compliance. There is still a considerable gap in our understanding of the extent to which knowledge affects attitudes and the ways in which both can be used to predict behavior. Knowledge is an essential tool in attaining the goal of patient education which is "to provide the individual with enough assistance where needed to help them understand the factors that promote health and those that threaten it and to make informed choices in their own lives" (Somers, 1978, p. 39). Without this tool, the goal can never be realized. Acquisition of this knowledge by the patient seems dependent on many factors. The literature would suggest that patient input in defining actual learning needs is necessary if learning is to take place.

Perceptions of Patient Needs

The importance of patients' perceptions in long range recovery from heart disease has been explored by few researchers. Clancy et al. (1984) looked at the influence of patients perceptions on return to work following coronary bypass surgery and found that return to work was directly related to the patients' perceived state of health rather than clinical symptoms, age, educational level or economic need. The researchers recommended patient education as an effective method of averting potential misperceptions. A comprehensive program based on a careful assessment of the patients' needs and perceptions should be provided perioperatively as patients should be planning the fuutre on the basis of how they feel about themselves and what they feel they are able to do.

Tirrell and Hart (1980) looked at the relationship of health beliefs and knowledge to exercise compliance in patients after coronary bypass surgery. This study examines compliance of patients within the Health Belief Model as related to beliefs about health and knowledge of their condition. These researchers found that several factors relating patient compliance to exercise prescription included knowledge of the exercise prescription and the number of barriers to the regimen. Individual perception of the efficacy of the exercise program was the next strongest relationship with compliance levels. It can be shown that patients must have: adequate knowledge about the perceived program, a minimal number of obstacles to overcome in carrying out this program, and a perception of the program as being useful to his individual situation. These are consistent with the characteristics of the adult learner.

A study was conducted by Stanton (1983) to examine the perceived adequacy of education of cardiac surgery patients. When questioned, patients felt their education had been adequate in many areas but indicated additional information in the areas of emotional reactions and return to sexual activities would have been beneficial.

These results concurred with those of Tuttle et al. (1964), Meyer and Latz (1979), and Scalzi and Dracup (1979).

Much work has been done to identify factors which influence patients' perceptions of their cognitive needs (Dodge, 1969; Dodge, 1972; Aspinall, 1975; Williamson, 1978; Lauer, et al., 1982; Goddard and Powers, 1982; Gerard and Peterson, 1984). The basic assumption underlying this work is that the more a patient knows about his condition, the more likely he is to cooperate with his prescribed treatment regimen. According to Dodge (1969), individuals are more likely to seek information which they perceive as vital to their survival in a situation than they are to information which has little relevance. Receiver characteristics are important determinants in seeking information. Few studies have been conducted to determine what a patient and his family wish to know with respect to his illness (Meyer and Latz, 1979; Rodgers, 1983; Moynihan, 1984). Others examine the learning needs of patients as they perceive them and compare them to the perceptions of health care workers (Dodge, 1972; Pfisterer, 1975; Casey, et al., 1984; Lauer, et al., 1982: Goddard and Powers, 1982; and Gerard and Peterson, 1984). Attempts to identify specific learning needs of patients has resulted in revision of existing teaching programs to include what the patients want to know (Meyer and Latz, 1979). Studies to compare nurse and patient perceptions of patient learning needs have produced some surprising results but no firm conclusions.

Dodge (1972) looked at areas of agreement and disagreement in importance of information items between medical and surgical patients and the nurses involved with their education and found several incongruencies. Explanations for these differences included the fact that nurses stress the information they were qualified and permitted to give, and nurses indicated the importance of items from a general perspective, whereas patients responded more specifically from their own individual point of view. This very plausible explanation certainly gives credence to the premise than an individualized, collaborative approach to patient education would be most effective. Moynihan (1984) attempted to assess the learning needs of post MI patients and found them to be relatively congruent with the components of an organized rehabilitation program. Pfisterer (1975) conducted a study to examine learning needs of CAD patients as seen by the patient, his doctor and his nurse. Expectations of who would teach were also examined. Though the sample size was small, some surprising results were found. With one exception, agreement among doctors, nurses and patients' responses about the patients learning needs never exceeded 50%. Of the five nurses responding, all five saw teaching as a nursing function, five out of ten doctors saw her as involved in teaching and only one patient perceived the nurse as having taught him. Although internal problems were identified in this study the results are certainly interesting and point to a need for further research in this area.

Lauer, et al. (1982) studied the learning needs of cancer patients and found significant differences between nurses' and patients' perceptions. Although both groups placed high importance on information about the disease, treatment, and other related information, nurses rated these items as being significantly more important than did the patients themselves. Nurses identified "dealing with feelings" as the area they felt more important to patients whereas patients selected "minimizing side effects of therapy" as most important.

Goddard and Powers (1982) looked at the learning needs of hemodialysis patients and found significant differences between the nurses and patients in the importance attributed to informational items. Nurses indicated diet and fluid restriction as most important to patient education while patients felt prevention of injury to the fisttula and avoidance of infection were highest educational priorities. The difference between these two perceptions is interesting and indicative of the need for further study. Casey, et al. (1984) conducted a study to examine the perceptions of educational needs of patients after MI. Researchers compared the patients' perceptions of learning needs to what nurses and physicians felt these individuals needed to learn. Data from this study indicated a general agreement among these groups as to the importance of information that should be included in patiet education for heart attack patients. Researchers caution though that congruence of perceived educational needs of post MI patients should not be misconstrued to mean that an educational needs assessment for these patients is not necessary. Gerard and Peterson (1984) however conducted a similar study but with somewhat conflicting results. Data from this project indicated some significant differences between the patients and nurses as to the perceived learning needs. Because patient compliance is greatly dependent upon complementarity of expectations between teacher and patient, these discrepancies could indicate a potential area of conflict between patient and teacher expectations.

Though considerable research has been done in this area, divergent and conflicting findings seem to surface. Without a clear cut idea of what a patient feels he wants and needs to know, meaningful patient education can only be a haphazzard affair. The purpose of this study therefore was to explore the heart attack victim's perceptions of his learning needs and compare and contrast these perceptions with those of nurses involved with patient education. This was, in part, a replication of the study by Gerard and Peterson pertaining to perceptions of cardiac patients learning needs. The investigator also attempted to discover from whom the patient expected to receive this information. An awareness of this factor may provide the health care worker with more insight into the educational expectations of the patient.

Summary

A review of the literature on education discloses four basic assumptions concerning the adult learner. For education to be effective the adult must be allowed self direction and be able to incorporate past experiences and knowledge into the learning situation. The value and pertinence of material presented as well as immediate practical application of this material are also necessary to the adult learner. Since most individuals experiencing a heart attack are adults, the consideration of these factors is essential in the development of educational programs. Though evidence of specific elements which ensure success of these programs is somewhat inconclusive, the provision of educational information does seem to contribute to a shorter hospital stay and increased incidence of returning to work. The value of a collaborative approach in the development of these programs has been demonstrated by several researchers, both from the realm of adult education and health care. The consistent evidence of incongruence between educational needs as perceived by patients and nurses gives further cause for client input into program design. It is because of these findings that the investigator examined learning needs of cardiac patients from both perspectives as well as the educational expectations of health professionals by patients.

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Methodology

Research Design

A descriptive survey research design involving two independent samples were used in this study to describe and compare coronary patients and cardiac nurses' perception of the learning needs of the coronary patients. The samples and setting of the study, data collection procedures, research instruments, and data analysis procedures are discussed in the following sections.

Study Samples

Patient Group. The target population of this group consisted of all patients admitted to a coronary care unit following myocardial infarction. Due to practicality however, actual study population consisted of patients admitted to the coronary care units of two active teaching hospitals within the city of Edmonton. The first 60 patients admitted between December 1985, and June 1986, who fulfilled the specified criteria were included, therefore a convenience sample was used. The limitations inherent in the use of convenience sampling are recognized and discussed within the limitations of the study.

Only patients with a diagnosis of myocardial infarction were included in this study. The following criteria were used in the initial selection of patients eligible for the study:

1) be able to speak and read English.
2) be diagnosed as having an acute myocardial infarction as evidenced by serial enzyme changes, electrocardiographic changes and clinical symptoms.
3) give written consent to participate in the study.

Cardiac Nurses Group. The target population of this study would ideally be all nurses employed in coronary care units. In this case, however, the study population was all registered nurses who were employed on a full-time or part-time basis in the Coronary Care Unit of the hospitals involved. The actual sample was further restricted by those who consented to participate, thus constituting a convenience sample. To ensure adequate exposure of the nurses to coronary patients, part-time nurses included in the study were defined as those who worked a minimum of 24 hours per week in the coronary care unit. A staff list was obtained from the unit supervisor. In addition to the above criteria, all nurses included in the study were asked to give written consent to participate.

Setting

Two teaching hospitals in Alberta were used for this study. Both institutions have coronary care units which contain specialized equipment for monitoring coronary patients. In both institutions cardiac patients are transferred from the coronary unit to a progressive step-down unit for less intensive monitoring and observation prior to transfer to a medical ward. Education of the coronary patients is the responsibility of nursing staff and begins while the patient is in the Coronary Care Unit, and continues with his transfer to the Progressive Coronary Care Unit (PCCU). The bulk of coronary teaching would occur while the patient is in PCCU. Nurses working in CCU staff PCCU as well.

Research Instruments

Following a review of the literature, the investigator selected the Cardiac Patients Learning Needs Inventory (CPLNI) developed by Gerard and Peterson (1984) to collect the required data for the study. The questionnaire for cardiac patients consists of 43 need statements with fixed-alternative answers. A five-point Likert-type scale was used to measure the degree of importance of the learning needs of coronary patients from "not important" to "very important". The CPLNI consists of eight informational categories: Introduction to the coronary care unit (CCU), Cardiovascular anatomy and physiology, Psychological factors, Risk factors, Information about medication, Dietary information, Physical activity information, and Miscellaneous information.

Items which did not fit into the first seven categories but which are frequently part of the education of M.I. patients were put into the miscellaneous category. Items such as how to check heart rate, possible signs of angina and congestive heart failure and when to consult a physician as well as information about post-discharge tests and where one could learn cardiopulmonary resuscitation were included here. Each of the eight categories consists of four to seven items. An open-ended item was included for respondents to list any additional information they would want to receive and ranked as well.

The Expected Educator Tool was developed in conjunction with the CPLNI to explore patients' perceptions of nurses as teachers. Patients are asked to indicate from whom they expect to receive the information referred to in each item of the CPLNI. The choices are nurse, doctor, dietician, pharmacist, or other. Patients are asked to check the type of personnel they believe would teach this information.

The Peel Prognostic Index (Peel et al., 1962) was selected as a means of assessing the severity of the patient's illness. This instrument was developed for M.I. patients and incorporates such variables as age, sex, previous cardiac history, presence and severity of shock, congestive heart failure, cardiac arrhythmias and electrocardiographic changes.

Demographic data such as age, sex, education, marital status, and previous cardiac history of patients will be obtained with the Patient Characteristic Tool for the purpose of describing the sample on variables which are suggested by the literature as being relevant.

Background data such as age, type and amount of nursing experience will be collected for the purpose of describing the nurse sample as well.

Data Collection Procedure

The investigator had daily contact with the unit supervisor in the CCU to identify the confirmed myocardial infarct patients who were being transferred to the PCCU. The researcher then introduced herself to the patients and explained the study. Written consent was obtained from the patients who agreed to take part. Within 24 hours of being transferred to the PCCU, participating patients were given the Cardiac Patients Learning Needs Inventory (CPLNI) (see Appendix A) and the Expected Educator Tool (see Appendix B) to complete and return to the investigator. Timing of administration of these instruments was based upon the fact that patients would have been free of chest pain and free of any arrhythmias for a minimum of 24 hours, would be past the initial acute phase and would be in a setting more conducive to acceptance of diagnosis and realization of educational needs. The patients were also asked to complete the Patient Characteristic Tool (see Appendix C) to return with the CPLNI. The subjects' severity of illness was assessed by the investigator using the Peel Prognostic Index (see Appendix D) using data from information received from the patient's chart.

The study was explained to the nursing staff working in the CCU and written consent was obtained from those who wished to participate. The nurses were asked to complete the Cardiac Patients Learning Needs Inventory as well as the Nurse Characteristic Tool (see Appendix E) and leave them in a specified location to be picked up by the investigator.

Reliability and Validity

In an attempt to establish content validity a thorough review of the literature was done to obtain a large number of items about heart disease and recovery from a heart attack (Gerard and Peterson, 1984). These items were reviewed independently for representativeness of content by four doctorally prepared nurses who were teaching cardiovascular nursing content at the graduate nursing level and by two nurse specialists who have masters degrees in cardiovascular nursing. The CPLNI was also reviewed by the head of the Department of Adult Education, University of Alberta (Puffer, 1985) and revisions were made as recommended to clarify items, and improve instructions. Items were simplified to ensure their vocabulary was comprehensible to patients.

The reliability estimated by the alpha coefficient for the total test was .91. Alpha coefficients for various informational category were as follows: Introduction to CCU, .68; Anatomy and Physiology, .96; Psychological

Concerns, .69; Risk Factors, .86; Medications, .89; Dietary Information, .89; Physical Activity, .81; and Miscellaneous Information, 84 (Gerard & Peterson, 1984).

This researcher pretested the CPLNI and the Expected Educator Tool on five coronary patients who met the criteria previously outlined in order to assess the clarity of instruction and determine the length of time needed to complete the questionnaire. These patients were not included in the study sample. The CPLNI was also presented to five CCU nurses who met the inclusion criteria previously outlined to assess the clarity of instruction and to assess length of time needed to fill out the questionnaire. These nurses were not included in the study sample.

Data Analyses

Descriptive statistics were used to analyze the data in relation to the previously outlined objectives. The importance of learning needs of coronary patients was rated on a five point Likert-type scale from "not important" to "very important" by both patients and nurses. Factor analysis was carried out for both sets of data to obtain factor scores on major sub-components of needs. A multiple regression model was used to see how the variation in factor scores could be explained by independent variables such as age, education, occupational and marital status, severity of illness and hospital of admission for patients and age, type and amount of nursing experience and hospital of employment for nurses in the study.

To determine degree of importance for various learning needs, the average rating of the Likert-type scale across all respondents was assigned to each item in the scale. Using these average ratings Pearson Product Moment and Spearman rank order correlations were computed. Thus the importance of learning needs as perceived by coronary patients were compared to the importance of learning needs as perceived by nurses in an attempt to identify any incongruences between these two groups.

In analysis of the data obtained from the Educator Preference Tool, frequencies and percentage distributions were tabulated to determine from whom patients expect to receive educational information.

CHAPTER IV

Results and Discussion

In this chapter, the results of the study are presented and analyzed with regard to the research objectives outlined in Chapter I. A description of the nursing sample is presented with discussion on these findings and the results of data analyses. As well, a description of the patient sample is presented with a discussion of the characteristics of this group and an analysis and discussion of the results found here. Finally, the analysis of the responses to the Expected Educator Tool is presented.

Characteristics of the Nurse Sample

A total of sixty nurses completed and returned the Cardiac Patients Learning Needs Inventory. Thirty nurses from both hospitals involved in the study agreed to participate. Demographic information was obtained on all nurse subjects with the Nurse Characteristic Tool. All of the nurses approached agreed to take part in the study.

Work-status. Forty-six nurses worked full time in coronary care unit. Ten nurses worked part time at least three days per week and the remaining four nurses were categorized as reserve staff and all worked a minimum of two shifts per week. This ratio of full time to part time staff is in keeping with staffing patterns in most acute care settings. Because of the everchanging technical aspect of working in this type of setting it is not an area which lends itself to working an occasional shift. Without frequent exposure to this field, one's knowledge base would quickly become outdated and obsolete.

Age. The nurses ranged in age from 22 to 55 years. The two groups of nurses were fairly similar in many respects. The mean age of nurses from Hospital A was 30.7 years and from Hospital B was 31.7 with an overall mean age of 31.23 years. Almost 92% of the nurses were under the age of 40. The relatively low mean age is consistent with that of most nursing staff in an acute care setting. Working in this milieu is physically, emotionally and intellectually demanding. The necessity of continuing education to maintain a current knowledge base requires time, energy, and often financial investment which older nurses may not be willing or able to give with home and family responsibilities. As well, most critical care areas have 12-hour shifts which are physically demanding and not often compatible with maintaining a home and family.

Graduation year. Over half the nurses studied had graduated between 1970 and 1979 with an additional 20% graduating since 1980. Again, this is not surprising since coronary care units are a product of the 1960's. Nurses graduating before this would have had no exposure to this specialized area as a student, so would understandably be reluctant to attempt to enter this field of nursing. Older nurses may have less confidence in their ability to function in this environment.

Experience. The number of years of nursing experience was relatively parallel to the year of graduation indicating that most nurses who worked in the coronary care unit had continued to work full time since graduation. Because of the dynamic nature of the technical and procedural knowledge required by critical care staff, one might expect this would be a difficult area to leave and return to at some point later in a career. It was interesting to note that of the subjects studied from Hospital B, 80% of the nurses over 33 years of age were either single or divorced, therefore having more time and energy to commit to a career.

The majority of the nurses studied had worked for some time in an area other than coronary care. Again, this would be expected as several critical care areas require prior nursing experience as a condition of employment. This is also in keeping with recommendations made by the National Institute of Health that nurses should have at least one year of postgraduate clinical experience before ICU training (N.I.H., 1983).

Nursing experience specific to the coronary care unit ranged from one to fifteen years. Forty percent of the nurses had three years or less coronary nursing experience with 28% having seven years or more. The large number of nurses with relatively few years of CCU experience is not surprising. Because of the emotionally intensive nature of the work, many nurses do not stay long in this area before moving on to a less stressful type of nursing.

Generally speaking, the two groups of nurses were quite similar in age and clinical experience. The frequencies and percentages of selected characteristics of the nursing sample including age, graduation year, general and cardiac nursing experience and hospital of employment were tabulated and appear in Table 1.

Cardiac Patients Learning Needs Inventory (CPLNI)

The CPLNI was a listing of 43 informational items covering several aspects of educational needs for post M.I. patients. The 43 items were grouped into 8 major categories entitled: Admission Information; Anatomy and Physiology; Psychological Information; Risk Factor Information; Medication Information; Dietary Guidelines; Physical Activity Restrictions; and Miscellaneous Information (Gerard & Peterson, 1984). The nurses participating in the study were asked to rate the importance of each educational item for a coronary patient to learn on a five point Likert-type scale from "not important" to "very important". The mean scores of responses in each of the major categories were computed according to age, graduation year, coronary and general

Table 1

Selected Characteristics of Nurse Sample (n = 60)

Characteristic	Frequency	Percentage	Cumulative Percentage
AGE			
22 to 30 years	28	46.7	46.7
31 to 40 years	27	45.0	91.7
41 to 55 years	5	8.3	100.0
GRADUATION YEAR			
1950 to 1969	8	13.3	13.3
1970 to 1979	33	55.1	68.3
1980 to 1986	19	31.6	100.0
CARDIAC NURSING EXPERIENCE			
3 years or less	24	40.0	40.0
4 to 6 years	19	31.7	71.7
7 years or greater	17	28.3	100.0
NURSING EXPERIENCE			
3 years or less	6	10.0	10.0
4 to 6 years	14	23.0	33.3
7 years or greater	40	66.7	100.0
HOSPITAL OF ADMISSION			
Hospital A	30	50.0	50.0
Hospital B	30	50.0	100.0

nursing experience. The significance of each independent variable with respect to the differences in mean subscale score was also computed.

Age. The nurses were subdivided into age groups and some rather surprising results were found in terms of perceived importance of patient learning needs. Older nurses between ages 41 and 55 felt it was more important that patients receive basic information on admission to the coronary care unit than did those in the younger age group (31 to 40). The older nurses may well have identified more closely with the patients admitted to the CCU because of the similarity in age. They themselves would perhaps want to be well informed and so may have ranked the importance of patients being informed more highly. Younger nurses may see the admission to the coronary care unit as a time of close monitoring, relief of pain or treatment of other complications and rest rather than a time of high educational need for M.I. patients.

Nurses in the older group attributed less importance to the need to learn about anatomy and physiology of the heart, psychological items, and risk factors than did younger nurses but placed much higher importance on patients' needs to learn about medication regimen, dietary guidelines and physical activity restrictions. This difference may be indicative of a greater emphasis being placed on a holistic approach to patient education in recent years in nursing education with a strong bent towards the psychological needs of the patient. Nurses graduating some years ago may be more familiar with a narrower approach to patient teaching and deal mainly with only necessary informaton such as medication prescription, dietary allowances, and activity and exercise restrictions. Also, information and research on risk factors implicated in the development of heart disease is relatively new and older nurses may not be as well informed in this area. Findings such as this give rise to the question of how much time and energy nurses put into reading recent publications about heart disease and keeping themselves current in this field. No statistically significant difference was found between importance of learning needs among nurses grouped according to age.

Year of graduation. The means scores for each subscale were computed according to year of graduation and similar trends were found with respect to ranked importance of learning needs for coronary patients. Nurses who graduated before 1970 put greater importance on the need for patients to learn about medication, dietary and activity restriction. Again, nurses in this group may be less familiar with the current thought on psychological impact of a critical illness on an individual and less aware of recent findings on risk factors in the development of coronary artery disease. These nurses would perhaps see a greater need for patients to learn about diet, exercise, and medications because they are items a patient will need to know on a day to day basis and were the major components any educational programs available when these nurses would have graduated. Being more famliar and knowledgeable about these topics may indeed have prompted these subjects to rank their importance more highly for patients to learn. Again, no statistically significant difference was found with respect to graduation year.

Cardiac experience. The nurses were then grouped according to years of cardiac experience and similar findings were seen. Nurses who had seven or more years of cardiac experience gave higher importance to education of patients in the subscales of medication, diet and physical activity than nurses with less experience. Again, their increased familiarity with contact in these areas may account for their ranking them more important. Among nurses grouped according to cardiac experience there was a statistically significant difference in relation to information about physical activity restrictions. Nurses with more cardiac experience indicated a greater importance for patients to learn about activity and exercise restriction. This particular category included items concerning limited activity during the acute phase, gradual increase in activity in the rehabilitation phase as well as return to sexual activity. The fact that enforcing physical restrictions is one of the major concerns and responsibilities of nurses in the acute care setting and perhaps one of the most difficult ones for patients to accept and understand may indeed explain why a nurse with more experience may see a greater need for patient education in this category. Activity progression is also one of the few areas where patients have any control. Their medications are prepared and brought to them as are their meals, but walking and activity progression is to some extent left up to the patient. If patients are unaccepting of their diagnosis and deny the fact that their heart requires rest, their one recourse is to increase their physical activity in an attempt to prove to themselves and sometimes to health professionals that they are fine and can tolerate unlimited activity. Thus there is a need for greater teaching in this area. Nurses who graduated before 1970 have also seen a radical change in thinking and practice among physicians as to activity restrictions for patients following a heart attack. When these nurses graduated, patients following a heart attack were kept on strict bed rest for two to three weeks, were bathed and fed by health care workers, and not allowed to return to work for three to six months. Today, patients are up walking three days after a heart attack, home in ten days and returning to work in six weeks. Because of the dramatic change in mode of treatment in these respects, nurses may see a greater need to teach patients specifically what they can and cannot do for activity and exercise. Because only one significant difference was found among the subscale with respect to the independent variables being examined, one must view the results with appropriate caution.

Hospital of employment. The nursing subjects were grouped according to hospital of employment and similar results were found in importance of learning needs for cardiac patients. This was not surprising since both groups were quite similar with respect to age, experience and year of graduation. The mean age of nurses from Hospital A was 30.7 and 31.7 for nurses from Hospital B. The mean graduation year for Hospital A was 1976 and 1975 for Hospital B. A slight variation was seen between institutions for both general and cardiac nursing experience. In Hospital A, nurses had a mean nursing experience of 8.7 years and cardiac experience of 4.8 years, while in Hospital B nurses had worked a mean of 9.8 years general duty and 5.3 years in cardiac nursing. This difference in years of experience may be explained by the fact that Hospital A has an exclusive cardiac care unit while Hospital B has a combined ICU/CCU. Perhaps this greater variety of experiences is less conducive to burnout and a greater incentive to stay longer in this type of unit. A summary of the mean scores of each subscale for nurses grouped according to independent variables can be found in Table 2.

Table 2

Mean Scores for Subscales for Nurses Grouped According to Independent Variables

Variable	Need	Anatomy	Psycho.	Risk Factor	Med.	Diet	Physical	Misc.	Total
Age									
22-30 years	4.20	4.13	4.31	4.50	4.64	4.06	4.42	4.28	4.29
31-40 years	4.03	4.02	4.11	4.25	4.50	3.77	4.51	4.10	4.13
41-55 years	4.36	3.90	4.20	4.20	4.87	4.11	4.76	4.40	4.33
Total	4.14	4.06	4.21	4.36	4.60	3.90	4.50	4.21	4.22
Sig	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Graduation Year									
51-69	4.31	4.14	4.30	4.37	4.84	4.22	4.72	4.41	4.39
70-79	4.13	4.12	4.23	4.35	4.60	3.96	4.55	4.17	4.24
80-86	4.17	3.92	4.14	4.38	4.50	3.77	4.30	4.21	4.13
Total	4.14	4.06	4.21	4.36	4.60	3.94	4.50	4.21	4.22
Sig	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Card Exp.									
1-3 years	4.15	4.01	4.33	4.50	4.60	3.90	4.50	4.33	4.27
4-6 years	4.12	4.02	4.07	4.27	4.51	3.70	4.28	4.12	4.12
7+ years	4,14	4.18	4.20	4.27	4.70	4.00	4.74	4.15	4.28
Total	4.14	4.06	4.21	4.36	4.60	3.90	4.50	4.20	4.22
Sig	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	.02*	N.S.	N.S.
Nursing Exp.									
1-3 years	4.00	3.91	4.26	4.54	4.66	4.02	4.36	4.42	4.24
4-6 years	4.16	4.02	4.10	4.32	4.42	4.69	4.32	4.18	4.13
7+ years	4.15	4.10	4.24	4.35	4.65	4.01	4.58	4.19	4.26
Total	4.14	4.06	4.21	4.36	4.60	3.94	4.50	4.21	4.22
Sig	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Hospital									
EGH	4.15	4.07	4.27	4.40	4.62	3.93	4.59	4.24	4.25
Mis	4.12	4.06	4.15	4.32	4.58	3.94	4.40	4.19	4.19
Total	4.14	4.06	4.21	4.36	4.60	3.94	4.50	4.21	4.22
Sig	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.

*Significant with α set at .05.

Characteristics of Patient Sample

The sample consisted of sixty patients who met the criteria for inclusion into the study with thirty patients from both hospitals. Subjects ranged in age from 34 years to 82 years. The mean age for patients at Hospital A was 62.0 years and 60.2 years at Hospital B with an overall mean age of 61.1 years. Of the subjects studied, 50 were married, 2 were single, 3 were divorced or separated, and 5 were widowed. These numbers would be fairly consistent with the general population of coronary artery disease patients of this age group.

Marital status. In examining the marital status of subjects with respect to hospital of admission there were some slight variations seen. Hospital A had 23 married and 7 not married subjects and Hospital B had 27 married and 3 not married. This difference might be explained by the location of the institutions. Hospital A is a downtown hospital close to low income housing where one might expect to find single, divorced or widowed individuals living alone. It is also closer to several place of employment and entertainment so single or divorced people may choose to live in this area for these reasons as well. Hospital B is situated in a residential area of mainly middle to upper class family dwellings. There would be a high number of two-income families living in this area so fewer single or divorced people utilizing this facility.

Sex. Of the subjects studied, 48 or 80% were male and 12 or 20% were female. The groups differed slightly between hospitals with 21 males and 9 females admitted to Hospital A and 27 males and 3 females admitted to Hospital B. A closer examination of these groups indicated that the majority of female subjects from Hospital A were younger age group and currently employed. The location of this institution, close to several places of employment, could account for more working women being admitted to this hospital. Females admitted to Hospital B tended to be older and retired from the work force. During the period of data collection, three additional females were admitted to Hospital B but were excluded due to severity of disease. Research into incidence of heart disease indicates that women who have heart attacks tend to be older than their male counterparts and mortality rate is higher for women. Younger women who do infarct are often part of a competitive work force and subject to the stress and pressure felt to be a risk factor in the development of heart disease. However, other factors must be considered as contributors to heart disease. Heredity and familial tendencies are important risk factors over which the patient has no control.

Education. The educational level of subjects was also established with 19 patients or 31% having grade 9 or less education. Twenty-six or 43% had grade 10 to 12 and 15 patients or 25% had post secondary education. In examining educational levels according to hospital of admission, again some variations were found. Hospital B had more subjects with grade 10 to 12 education but fewer with post secondary schooling. Hospital A had fewer with grade 10 to 12 but more subjects with grade 9 or less and with post secondary education. Because this institution is close to some low income housing it may be utilized by more patients in the lower educational group. This institution is also close to several government and corporate office buildings so during working hours may be the closest health care facility, therefore being the one of the choice in an emergency situation.

Previous history. The incidence of previous history of heart disease was also examined and both groups were found to be quite similar. From Hospital A, 23 patients or 77% had no previous cardiac history while 7 or 23% had a previous myocardial infarct. At Hospital B, 26 or 87% had no history of heart disease while 4 or 13% had had a heart attack prior to this incident.

Severity of illness. The severity of illness of patients involved in the study was assessed using the Peel Prognostic Index. This instrument looks at such factors as age, sex, previous illness, presence of shock and congestive heart failure and arrhythmias occurring following infarction. A score is attached to each item and the total score is calculated. The higher the index, the more severe the disease. Peel scores of patients involved in this study ranged from 2 indicating relatively minor disease to 26 representing quite severe disease.

Severity of illness scores were then compared among patients according to age, sex, marital status, education and previous history and some rather interesting results were found. Age and sex are both factors considered in determining the Peel score so it was not surprising to find that the mean Peel score for patients under 55 years was 11.0, for 56 to 65 was 12.92, and for patients over 66 the mean score was 15.05. The overall mean score was 13.15. Since being female warrants a higher score than being male in this prognostic index, it is not surprising to find that the mean Peel score for men was 12.97 and for women 13.83. There was not a significant difference in scores for patients when grouped according to age or sex. It was surprising to find that when grouped according to educational level, there was a statistically significant difference in Peel scores. For patients whose educational level was grade 9 or less, the mean Peel score was 15.78, for patients with grade 10 to 12 it was 12.15, and for patients with post secondary education the mean score was 11.53. Since lower Peel scores indicate less severe disease, it appeared that in this group patients who are better educated tended to have less serious heart attacks. This relationship between severity of illness and educational level might suggest that better educated individuals tend to seek medical attention sooner thereby avoiding some of the complications of heart attack which may have arisen had they delayed seeking treatment. These patients may also have better access to the health care system. Several studies have been done which looked at delay time in patients seeking medical help following onset of symptoms of heart attack and the general findings are that patients wait an average of six hours before seeking medical advice. It would be interesting to see if educational level was related to delay time.

Previous history of heart disease is one of the most heavily weighted factors in determination of Peel index so not surprisingly a statistically significant difference in means was found between those with previous history and those without. There was also some variation in mean Peel scores between hospitals. Hospital A had a mean Peel score of 14.43 while Hospital B had a mean Peel score of 11.86. This variation may be due in part to different screening procedures for patients admitted to the coronary care unit. Because of bed and staff limitations, uncomplicated, less ill patients may have been admitted directly to the medical ward, with only the complicated, more ill patients being admitted to the coronary care unit. Patients in Hospital B may have received more aggressive medical management, thereby averting some potential problems. A more plausible explanation would be that with only 30 in the sample size from each hospital, this variation was indeed a function of chance. The difference found was not statistically significant.

When patients were grouped according to marital status, mean Peel index scores were compared and very little difference was seen. The mean Peel score for married patients was 13.30 while for not married the mean score was 12.40. This difference was not statistically significant.

The frequencies and percentages of selected characteristics of the patient sample including sex, age, marital status, educational level, previous history of heart disease, Peel Index score, and hospital of admission were given in Table 3.

Cardiac Patients Learning Needs Inventory

As in the original study, the 43 identified learning needs for coronary patients were subdivided into 8 major categories: Admission Information; Anatomy and Physiology; Psychological Information; Risk Factor Information; Medication Information; Dietary Guidelines; Physical Activity Restrictions and Miscellaneous Information (Gerard & Peterson, 1984). The instrument was explained to the patients and they were asked to rank how important each item was for them to learn on a five point Likert-type

Table 3

Selected Characteristics of Patient Sample (n = 60)

Characteristics	Frequency	Percentage	Cumulative Percentage
SEX			
Male	48	80.0	80.0
Female	12	20.0	100.0
AGE			
34 to 55 years	14	23.3	23.3
56 to 65 years	27	45.0	68.3
66 years and greater	19	31.7	100.0
MARITAL STATUS			
Married	50	83.3	83.3
Not Married	10	16.7	100.0
EDUCATION STATUS			
Grade 9 or less	19	31.7	31.7
Grade 10 to 12	26	43.3	75.0
Post Secondary	15	25.0	100.0
PREVIOUS HISTORY OF CAD			
Yes	11	18.3	18.3
No	49	81.7	100.0
PEEL INDEX SCORE			
2 - 9	18	30.0	30.0
10 - 19	34	56.7	86.7
20 and over	8	13.3	100.0
HOSPITAL OF ADMISSION			
Hospital A	30	50.0	50.0
Hospital B	30	50.0	100.0

scale from "not important" to "very important" and a score of 1, 2, 3, 4 or 5 was assigned respectively. The mean scores of each subscale were computed according to the patient's age, sex, marital status, educational level, previous history, severity of illness and hospital of admission. Subscale means were compared using various independent variables. When patients were subdivided into age groups, subjects in the younger age group (less than 55 years) assigned a greater importance to all 8 subscales than either of the other age groups. The greatest variation was seen in the subscale physical activity. Older patients over 65 years, ascribed less importance to learning about physical activity than did the 56 to 65 age group. The youngest age group, under age 55, attached the highest degree of importance to this aspect of education of all age groups. This category included information on activity restrictions in the acute phase, exercise progression in the rehabilitation stage as well as resumption of sexual activity. These findings would not be surprising as living with activity and exercise limitations would have more impact on a younger individual who has perhaps been more physically active prior to this event than an older possibly retired person. Since frequency of sexual activity is reported to decrease with age, again one would expect a younger person to view this more important to learn than an older individual. The least variation in mean scores among patients grouped according to age was in the category of admission information. On admission to coronary care, age would likely have little influence on a patient's learning needs. This category includes such items of "why I'm in CCU", "why I have an I.V.", and "what tests will be done". It seems reasonable that the importance of learning these facts would not vary much from age to age. All patients would be anxious to find out this information.

The patients were also divided into male and female. Again, mean scores for both groups were quite similar in all categories. The largest difference was in the area of physical activity. Males scored the importance of this category higher than did females. Again, this diffeence may be related to age. The mean age for women subjects was 67 years while for men, the mean age was 61 years. One would expect older subjects to rank less important the need to learn about exercise and activity progression as well as resumption of sexual activity because it is less a factor in their day to day life and would perhaps require less attention now that a heart attack has occurred. A similar pattern was seen in the subscale of anatomy and physiology. Females placed less importance on the need to know exactly what the heart looks like and how it works. Again, this may well be a function of the mean ages of the two groups. The older female group would be expected to see it more important to know what they can do, what pills they must take and what they can eat. In keeping with this rationale, not surprisingly the only subscale which females scored higher than males was in medication information. No statistically significant difference was found in perceived importance of each subscale among patients grouped according to age or sex.

The patient sample was grouped according to educational status and mean scores of each subscale were computed and found to be very similar. The only significant variation here was in the category of physical activity. Patients with grade 9 or less education ranked the importance of learning about activity progression and exercise lower than patients with post secondary education. The highest mean score for this category was assigned by the grade 10 to 12 group. Again, looking at the mean age for each of these educational groups may help explain this finding. The mean age of the group with grade 9 or less education was 63.8 years while the mean age for the grade 10 to 12 group was 59.4 years and for the post secondary educated group was 59.6 years. This higher mean age of the less educated group may again help explain why they attribute less importance to learning about physical activity than the higher educated group. There was a statistically significant difference in perceived importance of learning about physical activity among patients grouped according to educational status. Again, one must view this finding with caution as it may be due to chance.

Patients were grouped according to presence or absence of pre-existing coronary artery disease. The greatest similarities between these two groups were seen in the subcategories on risk factor information, dietary information, and physical activity guidelines. Because these categories all deal with lifestyle and possible changes to be made, one would expect both groups to view this information with equal interest. The one statistically significant difference was found between previous history and the importance of learning about anatomy and physiology of the heart. It appears that the patients who had a previous history of heart disease felt it was more important to learn about this category than first time heart attack patients. Perhaps having been through this catastrophic event before helps patients realize the importance of knowing what the heart looks like and how it works. A first time victim of heart attack at this early stage of recovery may be more concerned about risk factors which contributed to his disease, what medications he will be taking and what foods he is allowed to eat. Again, one must keep in mind this result is an isolated significant finding and may indeed be due to chance.

Mean scores of each category were also analysed with respect to hospital of admission. Patients from Hospital A ranked the importance of learning items in all 8 categories somewhat higher than patients from Hospital B. One difference between these two groups was severity of illness with patients from Hospital A having somewhat higher Peel index scores. One might speculate that greater severity of illness may cause one to attach greater importance to learning needs. A statistically significant difference was found between hospital of admission and the importance of learning about the psychological impact of heart disease. Again, perhaps the greater severity of illness among these patients may explain why they rank the importance of this category more highly than patients from Hospital B.

Finally, the patients were divided into married and not married groups and mean scores for each category were found. Statistically significant differences were found between marital status and importance of learning about anatomy and physiology of the heart, psychological factors, risk factors and physical activity. One explanation for these findings may lie in a closer look at the not married group. Ten patients were not married and of these five were widowed. The mean age of the widowed group was 68.2 years while the mean age of the married group was 61.6 years. The unmarried group, half of which is well above the mean sample age and living alone, might be expected to view education following a heart attack somewhat differently. They would perhaps be less interested in learning about anatomy of the heart, risk factors implicated in the development of heart disease, psychological factors following a heart attack and activity and exercise and resumption of sexual activity following a heart attack. Their main concern would more likely be in the area of medication prescription and dietary modifications. Again, because the unmarried group is small (n = 10) it is not possible to draw any conclusions based on these findings. A complete summary of mean scores for each subscale in relation to various independent variables for the patient group can be found in Table 4.

Rank Order of Items

To further explore the perceptions of learning needs of coronary patients, the mean score of each individual item for both patients and nurses was calculated. With this information, the items have been ranked from most important to least important by patients and by nurses and this ranking appears in Table 5. In examining the prioritizing of the 43 items, some rather interesting results were found. Both groups saw "knowing what to do if chest pain occurs" as very important, as well as "what to do to decrease the chances of another heart attack". Having experienced the severe pain of a heart attack, patients would be expected to rank management of this pain

Table 4

Mean Scores of Subscales for Patients Grouped According to Various Independent Variables

Variable	Need	Anatomy	Psycho.	Risk Factor	Med.	Diet	Physical	Misc.	Total	Peel
Age 55	4.38	4.52	4.44	4.69	4.33	4.36	4.31	4.35	4.42	11.00
56-65	4.32	4.37	4.28	4.50	4.32	4.24	4.06	4.13	4.27	12.92
66+	4.35	4.28	4.11	4.31	4.21	4.09	3.84	4.01	4.13	15.00
Total	4.32	4.37	4.27	4.48	4.29	4.20	4.05	4.15	4.26	13.15
Sig	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Sex Male	4.35	4.42	4.28	4.52	4.28	4.22	4.11	4.17	4.29	12.9
Female	4.30	4.18	4.21	4.33	4.33	4.13	3.81	4.04	4.16	13.83
Total	4.34	4.37	4.27	4.48	4.29	4.20	4.05	4.15	4.26	13.15
Sig	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Education										
Grade 9	4.36	4.32	4.28	4.36	4.31	4.19	3.67	4.12	4.20	15.78
Grade 10-12	4.32	4.41	4.13	4.50	4.28	4.26	4.32	4.14	4.29	12.15
Post Sec.	4.35	4.37	4.48	4.60	4.26	4.12	4.06	4.18	4.29	11.53
Total	4.34	4.37	4.27	4.48	4.29	4.20	4.05	4.15	4.26	13.15
Sig	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	.002*	N.S.	N.S.	.05*
Previous										
Yes	4.56	4.66	4.49	4.77	4.43	4.22	4.09	4.20	4.38	17.36
No	4.29	4.31	4.22	4.48	4.26	4.20	4.04	4.13	4.23	12.20
Total	4.34	4.37	4.27	4.48	4.29	4.20	4.05	4.15	4.26	13.50
Sig	N.S.	.04*	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	.006*
Hospital A	4.46	4.46	4.48	4.55	4.39	4.35	4.14	4.24	4.37	14.43
Hospital B	4.23	4.29	4.05	4.41	4.19	4.06	3.96	4.05	4.14	11.56
Total	4.34	4.37	4.27	4.48	4.29	4.20	4.05	4.15	4.26	13.15
Sig	N.S.	N.S.	.008*	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Marital Status										
Married	4.39	4.44	4.34	4.56	4.34	4.26	4.15	4.22	4.33	13.36
Not Married	4.13	4.06	3.90	4.12	4.05	3.93	3.54	3.80	3.93	12.40
Total	4.34	4.37	4.27	4.48	4.29	4.20	4.05	4.15	4.26	13.13
Sig	N.S.	.03*	.04*	.04*	N.S.	N.S.	.005*	N.S.	.01*	.05*

*Significant with α set at .05.

Table 5

Ranked Important of Individual Items by Patients and Nurses

Item	Patient Rating	Nurse Rating
1. Why I'm in CCU	11	19
2. What tests will be done	3	36
3. Why I have an I.V.	39	35
4. Why my activity is limited	38	7
5. What the usual nursing routines and CCU policies are	32	43
6. What to do if I have chest pain	2	1
7. Why I have chest pain	15	13
8. What my heart looks like	38	40
9. What causes a heart attack	6	21
10. What happens when someone has a heart attack	4	22
11. How the heart heals	9	30
12. Why my heartbeat may be irregular, skipped beats	25	39
13. What are the normal psychological responses to serious illness	34	37
14. The importance of talking to someone about my feelings	40	26
15. What effect stress has on my heart	10	17
16. What I can do to reduce stress in hospital	16	27
17. What I can do to reduce stress at home	12	8
18. What the term risk factor means	18	28
19. What risk factors contributed to the onset of CAD	13	20
20. What I can do to decrease chances of another M.I.	1	4
21. How these risk factors affect my heart	14	25
22. General rules about taking medications	35	16
23. Why I am taking each of my medications	20	5
24. What the side effects of each medication are	29	12
25. What to do if I have problems with my medications	7	6
26. General rules about eating	37	38
27. How diet affects my heart disease	19	29

(continued)

Item	Patient Rating	Nurse Rating
28. What the words cholesterol and triglycerides mean	26	42
29. What foods contain cholesterol and triglycerides	23	34
30. What my diet restrictions are, if any	21	23
31. How to adapt recommended diet to my lifestyle	30	24
32. Why I am not able to do as much physically as before	33	10
33. General guidelines for physical activity	31	14
34. What my physical activity restrictions are, if any	17	9
35. How to tell if I can increase my activity	24	11
36. When I can engage in sexual activity	43	15
37. How to take my pulse	41	31
38. The signs and symptoms of angina and heart attack	8	2
39. The signs and symptoms of congestive heart failure	22	18
40. When to call the doctor	5	3
41. If any tests will be done after I go home	27	32
42. The reason for tests after I go home	36	33
43. Where my family can learn C.P.R.	42	41

Spearman Rank Correlation = .43

quite high. Since identification and control of chest pain is one of the foremost nursing responsibilities in caring for a patient with a heart attack and nurses need to depend upon patients' input for this, nurses would also be expected to rank this item highly important.

Since education is a major focus of nursing care of M.I. patients and often a first line of defence in prevention of recurring events, ways to decrease chances of another heart attack again would be expected to be ranked highly by both groups.

Both patients and nurses gave low importance to learning "why the IV is in place" and "what the usual nursing routines and CCU policies are". By the time patients completed the questionnaire, their intravenous was discontinued, and perhaps compared to information on diet, medication and exercise it seemed unimportant. Nursing routines and CCU policies are already established and perhaps not seen as pertinent to the individual patient so are not seen as important to learn. Neither items would have much bearing on the patient's future or lifestyle so for this reason may not be ranked as very important by either group. Neither group felt that general rules about eating was highly important to learn. This item may not have been seen as directly related to recovery from a heart attack so not necessary to be part of an educational program. Also, most adults may feel they are already aware of general rules about eating and may not feel this needs to be taught to the patient following a heart attack.

Both groups felt that learning how to take a pulse was relatively unimportant but perhaps for different reasons. Pulse check is taught to patients as a means of regulating their exercise progression. When they filled out the questionnaire, fairly early in their recovery, they may not be aware of this fact and so fail to see the need for such information. It would be interesting to see if the ranking would change at a stage later in their recovery. Nurses attributed slightly higher importance to pulse taking than patients but still quite low. Nurses in the acute care setting, such as those involved in this study, may well see pulse taking as a nursing responsibility and not something the patient needs to concern himself with.

One of the least important items ranked by both patient and nurse groups was "where my family can learn cardiopulmonary resuscitation (CPR)". Patients may not feel they wish to put this responsibility onto their family members. They also may not see sudden cardiac arrest as a complication of a heart attack if it was not part of the present event. It would be interesting to see how patients who had experienced a sudden cardiac arrest and been resuscitated would rank this item and how family members would rank this factor. Nurses may be reluctant to include this in a teaching program since they feel it more important to be optimistic and positive about the future. They may feel this information could be given more appropriately directly to family members.

In ranking learning needs, some discrepancies were found between the two groups. Patients felt it was very important to learn what tests were being done. The tests done for patients admitted to a coronary care unit led to the actual diagnosis of heart attack. Because of the importance of these test results, patients may well view them as highly important to know about. Nurses ranked this item much lower. These tests are done routinely on all patients admitted to the coronary care unit and nurses may simply see them as part of the routine protocol. This group would not have the same subjective attitude towards these tests as would patients.

Patients also ranked higher the importance of learning about the anatomy and physiology of the heart. To know "what causes a heart attack", "what happens with a heart attack" and "how the heart heals" may have more importance to a patient who is fairly early in his recovery. He may be more concerned with what has happened and why. Nurses may assume a more futuristic approach and see lifestyle changes, medication regimen and activity progression as more important.

One surprising finding was the rating of the item on when to engage in sexual activity. Nurses ranked it as being fairly important as expected after such things as medication prescription, stress management and prevention of another heart attack. Patients, however, ranked this item lowest on the list. This is somewhat contradictory to previous research but again one must keep in mind the stage at which patients filled out the questionnaire. Most patients were approximately 3 to 4 days post heart attack, perhaps too soon to be concerned with much more than relief of chest pain, walking around the room, and taking pills. Again a survey of these patients at a point further on in recovery may produce different findings. This difference in nurse and patient responses may possibly be explained by the difference in age of the two groups. The Spearman Rank Correlation was also computed on the ranking of items and revealed a correlation of .43 indicating a significant correlation between the rankings and the two groups. Although not high, this correlation is an interesting finding.

The researcher recognizes that to compare perceived learning needs of patients by both patients and nurses is inappropriate since both groups differ for many reasons. However, since nurses may indeed teach what they see as important and patients tend to learn what they see as important, a look at the ranking of these items is certainly an interesting exercise.

Expected Educator Tool

In an attempt to determine from whom patients expect to receive educational information, each of the 43 items were listed again and patients were asked to indicate the expected educator. Choices included dietician, pharmacist, physician, nurse or other. The frequencies of choices appears in Table 6. Nurses were seen as probable educators for such items as "why the intravenous is in", "usual nursing routines and unit policies", "what to do if chest pain occurs" and "how to reduce in-hospital stress". Patients may feel that this information is both familiar to the nurse and within her capabilities to relay to patients. Patients also felt the nurse would be the major individual to teach how to take a pulse. This and other items listed above might be seen more within the realm of nursing care. This may indicate that nurses are not seen as educators but as only concerned with actual patient care. The patients listed the physician as the main educator for coronary patients especially in the area of coronary anatomy and physiology, risk factor information, psychological information and activity progression.

Patients did recognize the role of other disciplines such as dieticians and to a lesser extent pharmacists in coronary education. Dieticians were seen as the major educator in the area of dietary counselling and actual dietary recommendations. Pharmacists were also listed a

Table 6

Patients' Responses on Expected Educator Instrument

Educational Item	Nurse	Doctor	Dietician	Pharm.	Other
Why I am in CCU	8	52			
What tests are done	6	54			
Reason for I.V.	40	20			
In hospital activity limitation	30	28			2
Usual routines and policies	53	7			
What to do if I have pain	42	18			
Why I have chest pain	10	50			
What the heart looks like	16	42			2
What causes a heart attack	9	50			1
What happens with heart attack	12	47			1
How the heart heals	11	48			1
Reason for irregular heart beat	13	47			1
Psychological responses	13	43			4
Need to discuss feelings	19	26	1		14
Effect of stress on heart	11	44			5
How to reduce in hospital stress	36	19			5
How to reduce stress at home	18	33			9
Meaning of term Risk Factor	15	44			1
Which risk factors contributed	4	54	1		1
How to decrease chance of another	5	54			1
How risk factors affect heart	10	48	1		1
General rules about taking pills	19	27	1	13	
Reason for each medication	16	34	1	9	
Possible side effect	12	26		22	

(continued)

Educational Item	Nurse	Doctor	Dietician	Pharm.	Other
What if medical problems arise	10	37		13	
General rules about eating	3	3	54		
How diet affects heart	4	9	47		
Meaning of cholesterol and triglyceride	8	16	33	1	2
Foods containing cholesterol and triglyceride	7	17	33	1	2
What diet restrictions are	3	14	43		
How to adapt diet to lifestyle	1	9	48		2
Reason for decrease in physical activities	5	54			1
General guidelines for physical activities	8	49			3
Reasons for restricted activity	8	49			3
When to increase physical activity	5	52			3
When to resume sex	6	53			1
How to take pulse	49	11			
Signs and symptoms of angina	6	53			1
Signs and symptoms of CHF	6	53			1
When to call doctor	6	43			11
What tests are done post discharge	10	49			1
Reason for tests post discharge	9	50			1
Where family can learn CPR	18	28			14

potential educator, though never above physicians. When making the "other" choice patients frequently noted physiotherapists, counsellors and ministers as possible options.

It was interesting to note that patients seemed to see a definite educative role for other disciplines such as pharmacist and dietician but indicated a much less defined area of knowledge for nurses. Nurses almost always were seen in an educational role secondary to physicians. This role is not compatible with Orem's supportive-educative role for nurses. Nurses may see themselves as educators but obviously there is much to do before patients see them as such.

The frequency and choice for each item according to the independent variables measured were determined and appear in Appendix F. Similar trends are seen as in Table 6 and there would appear to be no results which can be attributed to the independent variables described.

Summary of Descriptive Analysis

Descriptive statistics were used to describe the two groups of subjects. Thirty patients from both hospitals consented to participate in the study. Patients ranged in age from 34 to 82 years with an overall mean age of 61 years. Eighty percent or 48 patients were male and 12 or 20% were female. Fifty were married which was 83%, while 10 or 17% were unmarried. When educational level was examined it was found that 19 or 32% had grade nine or less, 26 or 43% had grade 10 to 12 and 15 or 25% had some post secondary education and 11 or 18% had a previous history of heart disease and 49 or 82% did not.

The nursing group consisted of 30 nurses from both hospitals and ranged in age from 22 to 55 with a mean age of 31.2 years. The nurses graduated between 1950 and 1985 with a mean graduation year of 1976. Their general nursing experience ranged from 3 years to 21 years and cardiac experience ranged from 3 years to 15 years. Both groups completed the CPLNI using a five point Likert-type scale and the means of each subscales were computed. These means were then compared among the nurses grouped on the independent variables and the following trends were found:

a) older nurses who graduated earlier placed greater importance on patients receiving basic information on admission to CCU;

b) older nurses who graduated earlier placed less importance on patients need to learn about anatomy and physiology of the heart, psychological items and risk factors;

c) older nurses who graduated earlier placed greater importance on the need for patients to learn about medication regimen, dietary guidelines and physical activity restrictions;

d) nurses with seven or more years of cardiac experience gave higher importance to patient education in the areas of medication, diet and physical activity than did nurses with less experience;

e) nurses with more cardiac experience indicated a greater importance for patients to learn about activity and exercise restriction and resumption of sexual activity;

f) no observable difference was found in responses from nurses when grouped according to hospital of employment.

The means scores of each subscale were compared among patients grouped according to the various independent variables with the following results:

a) subjects in the younger age group (34-55 years) placed greater importance on learning about activity progression and resumption of sexual activity than did older patients;

b) all patients placed high importance on the need to receive appropriate information on admission to ICU;

c) women placed less importance on the need to learn about activity progression and resumption of sexual activity than did men;

d) patients with lower educational levels attached less importance to learning about physical activity exercise progression than did patients in either other education groups;

e) patients from Hospital B attached less importance to learning about diet, medication regimen and activity progression than did patients from Hospital A;

f) unmarried patients placed less importance on learning information in all categories than did married patients with significant findings in the subscales of anatomy, psychological factors, risk factors, physical activity and miscellaneous information.

Using the means score for each individual item from both groups, the items were ranked in importance. The ranking was then compared between groups with the following results:

a) both groups felt that knowing what to do when chest pain occurs and how to decrease the chance of a second heart attack was very important;

b) both groups indicated that knowing why the I.V. was in place, what the usual CCU policies and routines were and where the family could learn CPR were not important;

c) patients indicated that knowing what tests would be done to establish a diagnosis was very important while nurses felt it was not at all important;

d) patients felt it was quite important to learn "what causes a heart attack", "what happens when someone has a heart attack" and "how the heart heals", while nurses attached much less importance to these items.

Using the Expected Educator Tool, frequencies were tabulated in an attempt to discover by whom patients expected to be taught. Generally, nurses were seen as probable educators for items directly related to nursing care such as "why the I.V. is in place", "usual nursing routines" and "what to do if the chest pain returns". Nurses were also expected to teach patients to take pulses. Patients identified other disciplines as educators in their area such as dieticians and pharmacists. Physicians were certainly seen as the main educator in almost every aspect of patient teaching. Nurses were never identified as the sole educator in any area but were seen as a secondary educator to the physician.

Factor Analysis

Factor analysis was performed on the CPLNI to identify the major categories of learning needs that were being measured by both patients and nurses. Initial incomplete principal components analysis identified ten factors having eigenvalues greater than one and explaining 76.5% of the total variance in responses from heart attack patients. In order to improve interpretability, a varimax orthogonal rotation was performed on the initial solution. The items having relatively high loading on each factor will be presented and discussed.

Patient Perspectives

FACTOR I. PHYSICAL NEEDS

The first factor identified contained eight items with a factor loading of .50 or greater. These items related primarily to PHYSICAL NEEDS. Items which had high loading on this factor are listed in Table 7. In examining the items which contributed substantially to this factor, one sees that they deal mainly with gaining knowledge about actual physical needs. Learning about medication prescription, further testing, how to check pulse rate and where to learn CPR would seem to fit well together as specific items a patient would see a need to learn to simply cope with his disease. Treatment during the acute phase following a heart attack often involves extensive use of various medications. This may include medications to treat or prevent chest pain, to attain and maintain hemodynamic stability and also to relax the patient and decrease his anxiety. As patients move from a highly protected environment to a more relaxed, less controlled situation, they may feel strongly about the need to learn about their medication regimen. Checking pulse rate is frequently associated with medications as the proper dosage is sometimes established in conjunction with a maintenance of an adequate heart rate; thus these items would fit well together. Also, a patient's stay in the critical care area as well as confirmation of his diagnosis is based upon

Table 7

Factor I - Physical Needs

Item Number	Item Content	Factor Loading
22	General rules about taking medication.	.555
23	Why I am taking each of my medications.	.562
24	What are the side effects of each medication.	.789
25	What to do if I have problems with my medications.	.602
37	How to take my pulse.	.751
41	If any other tests will be done after leaving hospital	.738
42	Reasons for further testing after I go home.	.579
43	Where my family can go to learn C.P.R.	.506

several tests done on a daily basis. As the individual moves to the progressive coronary care unit, his desire to learn about further tests to be done is understandable.

During a three to four day stay in the acute care setting, patients frequently have an opportunity to see the use of emergency procedures to treat the cardiac patients. This undoubtedly makes a deep impression upon the patient, as he himself has just survived a major medical catastrophe. Again, the importance he ascribes to learning C.P.R. on the part of his family would be expected. It is interesting to note that items in this factor seem to draw from several different subscales. However, a closer look reveals a common theme. These might well represent the main items a patient, moving from the controlled acute care setting to the more open less closely monitored progressive unit, would wish to learn.

FACTOR II. NUTRITION

The second factor appears related primarily to the need for nutritional information. The six items which loaded highly on this factor are listed in Table 8.

Each of the items in this factor related directly to information on nutrition and heart disease. The presence of heart disease has been attributed to a number of risk factors. Since two of the major risk factors, high cholesterol level and obesity, relate directly to dietary intake, it was not surprising to see that the second factor

Table 8

Factor II - Nutrition

Item	Content	Loading
26	General rules about eating	.472
27	How diet affects my heart disease.	.804
28	What the words cholesterol and triglycerides mean.	.737
29	What foods contain cholesterol and triglycerides.	.769
30	What my diet restrictions are, if any.	.611
31	How to adapt the recommended diet to my lifestyle.	.636

included the need for dietary information. This risk factor is also one that is within the control of the patient himself. He can achieve ideal weight and lower his serum cholesterol level by altering the diet through education. The patient may feel that obtaining information in this are would be of great benefit to him in reducing the risk of further problems.

It is interesting to note that no other items loaded highly on this factor, and of the forty-three original items, only six dealt with information on nutrition; all six demonstrated high loadings on this factor. The area covered by this factor would appear to be quite specific and all items related directly to it.

FACTOR III. PREVENTION

The third factor is related mainly to information on PREVENTION of a subsequent heart attack and complications from coronary artery disease. The five items which loaded highly on this factor appear in Table 9.

Each item in this factor looks at preventing a second heart attack both in terms of discovering the causes of the first M.I. so as to eliminate these risk factors, as well as dealing with subsequent problems should they arise. After a patient has been stabilized in the acute care unit, he progresses to the step-down unit. His medical care and education is based on prevention of complications such as angina, congestive heart failure, physical deconditioning

Table 9

Factor III - Prevention

Item	Content	Loading
18	What the term risk factor means.	.557
19	Which risk factors contributed to my disease.	.754
20	What can I do to decrease chances of another heart attack.	.754
21	How these risk factors affect my heart.	.668
40	When to call a doctor.	.651

associated with prolonged bed rest as well as prevention of further damage to the heart. This prevention involves an awareness of the risk factors implicated in the development of the disease process as well as methods to control or eliminate these factors. Because of the preventitive theme identified in these items, they would seem to fit well together in this factor.

FACTOR IV. PSYCHOLOGICAL INFORMATION

The fourth factor identified relates mainly to the need for PSYCHOLOGICAL INFORMATION. This factor included six items which had a high loading (see Table 10).

Inititally, one might wonder why items one and seven would load highly on a factor dealing with psychological needs. However, in actual fact, both the admission to the coronary care unit and the occurrence of chest pain are great sources of stress to the M.I. patients, so may indeed fit well with items related to psychological needs and dealing with stress. For the patient who has just been transferred from the acute care setting, the stress of his admission to the unit as well as the chest pain associated with a heart attack would be still very real to him, therefore explaining his desire to learn about both items. He has also had some time in a more relaxed setting to reflect on his psychological needs with respect to his diagnosis. At this point it seems reasonable that psychological needs and stressors in the acute care setting could combine to make up this factor.

Table 10

Factor IV - Psychological Information

Item	Content	Loading
1	Why I am in the CCU.	.665
7	Why I have chest pain.	.526
13	The normal psychological response to a serious illness.	.711
14	The importance of talking to someone about feelings.	.819
16	What I can do to reduce stress while in hospital.	.631
17	What I can do to reduce stress when I go home.	.589

FACTOR V. PHYSICAL ACTIVITY

The fifth factor identified relates mainly to the information on PHYSICAL ACTIVITY. The items which demonstrated high factor loadings appear in Table 11.

Again, the items contributing to this factor all deal specifically with one theme, resumption of physical activity following a heart attack. Because sexual activity is seen as a form of physical activity, it also fits into this particular category.

Progression of physical activity is just beginning to be important to the patient. He is just now able to ambulate short distances while still monitored by telemetry. He begins to see the need for graduated activity progression. Because of the stage in their recovery at which patients were questioned, it seems reasonable that physical activity would be of less importance because of the strict limitations imposed to this point.

FACTOR VI. PATHOPHYSIOLOGY

This factor consists of items which relate mainly to the PATHOPHYSIOLOGY of coronary artery disease. This is associated with five items which had a factor loading of .40 or greater (see Table 12).

The items in this factor deal with information on the pathology underlying the development of heart disease as well as a heart attack. Because of its relation to the disease process, information on congestive heart failure

Table 11

Factor V - Physical Activity

Item	Content	Loading
33	General guidelines for physical activity.	.664
34	What my physical activity restrictions are, if any.	.745
35	How to tell if I can increase my activity.	.658
36	When I can engage in sexual activity.	.558

Table 12

Factor VI - Pathophysiology

Item	Content	Loading
7	Why I have chest pain.	.411
8	What my heart looks like and how it works.	.460
9	What causes a heart attack.	.750
10	What happens when someone has a heart attack.	.607
12	Why my heart may be irregular or skip beats.	.746
39	Signs and symptoms of congestive heart failure.	.633

would fit well into this category as well. Items in this factor seem to be on a slightly different level. Patients have gotten through first level information such as what to do if problems arise, what pills to take, what foods to eat and how much activity to attempt. At this point the need for information seems to center around "why I have chest pain", "why I have irregular heart beat", "what causes a heart attack". There is now a need to know more about the pathophysiology underlying their disease.

FACTOR VII - HELP

Because few items loaded highly on Factor seven, the writer chose to examine all items with a correlation of .40 or greater. Four items were found to combine to form this factor on HELP. The items included here can be found on Table 13. Each of these items deal specifically with what to look for in terms of signs and symptoms of the disease and what to do should these signs occur. The four items included here combined well for informational needs on what to look for and how to summon help.

FACTOR VIII. EXPLANATION

Again, items with a loading of .40 or greater were used and three items were found to make up this factor. All items dealt with EXPLANATION as to what was happening. This factor clearly points to the patients need for an explanation of procedures and treatments taking place. The items which contributed significantly to this factor are listed in Table 14.

Table 13

Factor VII - Help

Item	Content	Loading
6	What to do if I have chest pain.	.671
38	Signs and symptoms of angina or heart attack.	.695
39	Signs and symptoms of congestive heart failure.	.416
40	When to call the doctor.	.402

Table 14

Factor VIII - Explanation

Item	Content	Loading
3	Who do I have an intravenous line (IV).	.426
4	Why is my activity limited.	.818
23	Why I am taking each of my medications.	.421

FACTOR IX. PROTOCOL

In Factor nine, only two items were found to have a correlation of .40 or greater. Both items clearly dealt with usual routine or PROTOCOL in the coronary care unit. These two items combine well for a factor on information patients admitted to the coronary care would be interested in learning as both usual routines are included as well as specific testing to be done. Items with high loading on this factor appear in Table 15.

FACTOR X. RESTORATION

Factor ten had only one item which showed a high loading. This involved the healing process of the heart following a heart attack. This item appears in Table 16.

Summary

Factor analysis was performed on the CPLNI item scores in an attempt to identify the major categories of learning needs as measured by patients. Through this process, six major clearly interpretable factors were identified and labeled PHYSICAL NEEDS, NUTRITION, PREVENTION, PSYCHOLOGICAL INFORMATION, PHYSICAL ACTIVITY and PATHOPHYSIOLOGY. These factors were quite similar in content to the eight subscales identified by the original developers of the tool which were entitled, PHYSICAL NEEDS, ANATOMY and PHYSIOLOGY, PSYCHOLOGICAL FACTORS, RISK FACTORS, MEDICATION and DIETARY INFORMATION and MISCELLANEOUS. The one subject not found in one specific

Table 15

Factor IX - Protocol

Item	Content	Loading
2	What tests are done to determine if I have had a heart attack.	.480
5	What the usual nursing routines and coronary care unit policies are.	.402

Table 16

Factor X - Restoration

Item	Content	Loading
11	How the heart heals.	.760

factor was medication information. The items relating to this area seemed to be included in several other factors. Most of the medication items were found in Factor 1, PHYSICAL NEEDS, grouped with other items such as information on further tests being done, where to learn C.P.R. and how to take a pulse. Medication information seemed more a part of general information on physical needs than a separate entity by itself. Other than this variation, the major factors identified by factor analysis were quite similar to the subscales developed by the original researcher lending strength to the validity of this instrument for measuring learners' needs of cardiac patients as perceived by the patients.

Pearson Correlation Coefficients

In addition to carrying out factor analysis on the patient responses to this instrument, the subscales outlined by the instrument developers (Gerard & Peterson, 1984) were correlated with the ten factors identified and discussed earlier. The Pearson Product Moment Correlation Coefficient was the statistic used. The subscale of NEEDS correlated highly with Factors 4, PSYCHOLOGICAL INFORMATION, and 8, EXPLANATION. The needs included informational items on "why I am in CCU", "tests to be done", "reasons for activity restrictions and I.V.", "usual routine and policies". Factor four included such items as "why I am in CCU", "why I have chest pain" and "psychological stress-related factors", while Factor eight included such items as "why I have an I.V.", "why activity is limited" and "reasons for medications". In examining this relationship, one sees many similarities between this subscale from the original instrument and the two factors discovered through factor analysis.

The subscale on anatomy correlated highly with Factor 6, PATHOPHYSIOLOGY. Again many similarities were seen. This subscale includes such items as "why I have chest pain", "what causes a heart attack", "what my heart looks like", "what happens with a heart attack", "how the heart heals" and "why I may have skipped beats". In looking at the items which loaded heavily in Factor six, pathophysiology, one sees "why I have chest pain", "what causes a heart attack", "what happens with a heart attack" and "reasons for irregular or skipped beats", and "signs and symptoms of congestive heart failure". The subscale defined by the instrument developer has very similar content to factors identified with factor analysis.

The subscale on psychological factors correlated highly with Factor four, PSYCHOLOGICAL INFORMATION. This subscale included items concerning psychological response to serious illness, "the need to talk about feelings", "the effects of stress on the heart" as well as "ways to reduce stress". Similarily, items in Factor four included "why

I am in CCU", "why I have chest pain", "psychological responses to serious illness", "need to talk about feelings" and "ways to reduce stress both in hospital and at home". It is interesting to note that two items which loaded highly on this factor but which were not part of the original subscale were "why I am in the coronary care unit" and "why I have chest pain". Perhaps for the individual who has had severe chest pain and has been admitted to the CCU with a heart attack, these items are more a source of stress and fit better with items dealing with talking about feelings and coping with in hospital stressors than general information items or anatomy and physiology.

The subscale on risk factors correlated closely to Factor three which dealt with what risk factor means, which risk factors contribute to heart disease, how they affect the heart and how to control them as well as when to call the doctor. All the items in the subscale on risk factors loaded highly on this factor.

Factor one, PHYSICAL NEEDS, included items from various subscales but included all items found in the category on medication information. Again, there was a marked similarity between this factor and the subscale on medication. The subscale on dietary information was found to correlate highly with Factor two on nutrition. Again there was strong similarity in that all items in this subscale loaded highly on Factor two as both contained the same six items. Factor five dealt with physical activity following a heart attack and included all items found in the subscale or physical activity except one. Again this factor was very similar in content to the subscale on physical activity.

Finally, the category on miscellaneous information correlated highly with Factors one, PHYSICAL ACTIVITY, and seven, help. This category includes such items as "how to take my pulse", "signs and symptoms of angina and congestive heart failure", "when to call a doctor", "what tests will be done post-discharge and why" and "where to learn C.P.R." Factor one, PHYSICAL NEEDS, included a variety of items including "medication information", "how to take a pulse", "what tests will be done post-discharge and why" as well as "where to learn C.P.R." One sees several common items between these two. Factor seven on help includes such items as "what to do if chest pain occurs", "signs and symptoms of angina and congestive heart failure" as well as "when to call a doctor". Again many similarities were seen between this factor and the subscale on miscellaneous informations.

Summary

Through the application of factor analysis to the forty-three items included in this instrument, ten factors were identified and discussed. These factors were then compared to the eight subscales proposed by the original developers of this tool. Because of the strong and consistent similarities between the factors and the subscales, the instrument seems to stand up well with an even greater degree of validity giving the researcher more confidence in the use of this particular instrument for this particular study. Thus, this analysis would appear to confirm the original division of the scale into subscales.

Nursing Perspective

Factor analysis was also performed on the responses received from the nurse subjects. Initial principal components analysis identified twelve factors having eigenvalues greater than one and explaining 78.3% of the variance in responses from this group. The factor matrix thus extracted was subjected to varimax orthogonal rotation to facilitate interpretation. The items with relatively high loading on each factor will be presented and discussed.

FACTOR I. CAUSE

The first factor identified contained eight items with a loading of .50 or greater. These items related primarily to establishing a CAUSE for the heart disease. Items which had high loading on this factor are listed in Table 17.

Table 17

Factor I - Cause

Item	Content	Loading
18	What the term Risk Factor means.	.690
19	Which risk factors may contribute to onset of my CAP	.676
21	How these risk factors may affect my heart.	.673
27	How diet affects my heart disease.	.551
28	What the words cholesterol and triglyceride mean.	.766
29	What are the foods containing cholesterol and triglyceride.	.748
30	What my diet restrictions are.	.674
31	How I can adapt recommended diet to my lifestyle.	.597

Items which loaded highly on this factor seem to deal mainly with identifying a cause for this heart attack. The need for information on risk factors in general was included here as well as more specific information on diet as it relates to the development of heart disease. Diet is one of the major controllable risk factors dealt with in this questionnaire. In following the theme of cause for the heart disease, these items would seem to fit well together. It is interesting to compare the factors identified by both groups and note the difference in focus. Patients' initial factor included items related to physical need and information necessary to cope with the disease. They were interested in learning about medication prescription, further tests and pulse check and where to learn C.P.R. The nurse group, however, identified information on risk factors and establishing a cause for the heart attack as important. From the patient responses, need for information on risk factors which contributed to the heart attack appeared in Factor III on prevention.

It should be remembered that patients were questioned shortly after experiencing a major medical event. It seems therefore reasonable that they would focus their educational needs on immediate survival and coping with the situation at hand. Nurses may be more concerned with finding the cause of this heart attack so actions can be taken to minimize the chances of further problems. It would be interesting to see if patients in later stages of recovery would rate their educational needs differently, perhaps attaching more importance to causes for heart disease and prevention.

FACTOR II. ACTIVITY PROGRESSION

The second factor related mainly to the need for information on ACTIVITY PROGRESSION. Seven items loaded highly on this factor and are listed in Table 18 following.

Of the seven items which loaded highly on this factor, five relate specifically to activity progression including the reason for physical limitations following the heart attack, general information on activity progression as well as specific restrictions imposed and recommended methods to increase activity. Sexual activity in relation to cardiac rehabilitation is simply seen as an energy expending activity, so fits appropriately in the area of activity progression. The remaining five items in this factor involve rationale for medication prescription as well as a plan of action should problems with medications occur. At first glance they may not seem to fit well in this factor, however one must realize that activity progression is closely related to medication prescription following a heart attack. The vast majority of patients are discharged on nitroglycerine and advised to carry this medication as they embark on an exercise program and reduce their physical activity if they find the need to take the

Table 18

Factor II - Activity Progression

Item	Content	Loading
23	Why I am taking each of my medications.	.501
25	What to do if I have problems with my medications.	.52455
32	Why I am not able to do as much physically as I was before.	.534
33	General rules for physical activity.	.837
34	What my physical activity restrictions are, if any.	.764
35	How to tell if I can increase my activity.	.717
36	When I can engage in sexual activity.	.857

nitroglycerine frequently. Also, several of the medications currently prescribed for post M.I. patients such as beta blockers and calcium antogonists are designed to lower heart rate and blood pressure to allow the patient to exercise more without unduly stressing the heart. This link between medication regimen and activity progression would be apparent to nurses trained in working with these patients and these medications, but not necessarily to the patients at this stage of recovery. This becomes clear when one examines Factor five of the patient group entitled physical activity. This factor contains only items 33, 34, 35 and 36 which deal specifically with general information on activity progression, when and how to increase activity and when to resume sexual activity.

Nurses placed activity progression in Factor 2, ACTIVITY PROGRESSION, while patients placed it in Factor five, PHYSICAL ACTIVITY. As patients recover following a heart attack, activity progression and exercise is one of the major components of nursing care for these people. It is therefore not surprising that both groups identified a factor related specifically to activity following a heart attack.

FACTOR III. SELF-HELP

Factor three includes six items with a loading greater than .50, all of which deal with measures the patient can take to control or eliminate symptoms and factors related to heart disease. These items are listed in Table 19.

Table 19

Factor III - Self-Help

Item	Content	Loading
5	What the usual nursing routines and CCU policies are.	.709
6	What to do if I have chest pain.	.560
15	What effect stress has on my heart.	.529
16	What I can do to reduce stress when I go home.	.573
17	What I can do to reduce stress while in hospital.	.701
20	What I can do to decrease chances of another heart attack.	.523

The items which loaded highly on this factors seem to deal with information on what the patient can do to help himself to deal with this crisis situation. An awareness of specific routines and policies in the CCU, what to do if chest pain occurs, what stress does to the heart as well as actions the patient can take to reduce stress and minimize the possibility of another heart attack could well be grouped together. These actions would cover the immediate situation in the CCU with learning routines and policies as well as what to do if chest pain does arise. An awareness of ways to reduce stress later in hospital and long term actions including reduction of stress at home and minimization of the chances of another heart attack would also fit well into a factor on self-help information.

FACTOR IV. GENERAL INFORMATION

Factor four consists of six items which had loadings above .50. This factor includes information on the pathophysiology associated with heart disease as well as psychological implications of a serious illness. The items included in this factor are listed in Table 20 following.

Items in this factor appear to involve two aspects of cardiac education, the pathology underlying a heart attack as well as the psychological impact of heart disease. Perhaps nurses working in a critical care setting are more aware of the psychological implications of serious illness and see it as part of the total disease entity. Emotional

Table 20

Factor IV - General Information

Item	Content	Loading
7	Why I have chest pain.	.508
9	What causes a heart attack.	.641
10	What happens when someone has a heart attack.	.504
12	Why my heart beat may be irregular or skip beats.	.615
13	The normal psychological response to having a serious illness.	.591
14	The importance of talking to someone about my feelings.	.619

support for patients and families is a major component of nursing care in this setting and may well fit with basic information on heart attack and heart disease. It is interesting to note that patients separated these two elements into Factor IV on psychological information and Factor VI on pathophysiology. To the patient who has just had a heart attack, dealing with "why chest pain occurs", "what causes a heart attack" and "why the heart beat may be irregular" plus the psychological aspect of dealing with a heart attack may indeed constitute two complete and separate components of his educational needs.

FACTOR V. GENERAL EXPLANATION

Factor five is composed of five items. This factor involves the need for explanation of procedure and treatment such as "why the intravenous is needed", "why activity is limited", "when to seek help" and "what and why further testing is being done". The items included in this factor appear in Table 21.

Nurses working with coronary patients spend a great deal of time explaining what they are doing and why to the patient. Nurses are taught that patients have a right to know what is being done to them plus they frequently use explanation as a valuable source of stress and anxiety reduction. An informed, aware patient is often less apprehensive and more cooperative with treatment. These items involving explanation of treatment would therefore fit well together.

Table 21

Factor V - General Explanation

Item	Content	Loading
3	Why I have an Intravenous line (I.V.).	.614
32	Why I am not able to do as much physically as before my M.I.	.501
40	When to call the doctor.	.507
41	If any other tests will be done after I leave hospital.	.840
42	The reason for further testing after I go home.	.612

In the factor analysis of patient responses, Factor 8 from this group, EXPLANATION, included only three items of explanation. One possible reason for the variation between the two groups might be that a patient who has just survived a heart attack has surrendered almost complete control of his environment and his body. Hospital personnel have fed him, cared for him, brought him whatever medications they felt necessary, controlled his social activities and monitoried every heart beat. Perhaps individuals of this severity of illness in a situation of such intense care, trusts the professional to do what is necessary and right and does not have a great need for explanation of insignificant items such as why an I.V. is in place. They may be more concerned with controlling pain and staying alive.

FACTOR VI. INITIAL ORIENTATION

Factor six included four items which had loadings of .40 or greater. Because there were few items which loaded highly in this and subsequent factors, it was decided to include items with loadings of .40 or greater. This factor included items which involved Initial Orientation to the coronary care unit. These items appear in Table 22.

This factor held no surprises. It covers all the basic information a nurse gives to a heart attack patient who is being admitted to the coronary care unit. It includes "why the patient is in the coronary care unit",

Table 22

Factor VI - Initial Orientation

Item	Content	Loading
1	Why I am in coronary care unit.	.811
2	What tests are done to determine if I have had an M.I.	.754
3	Why do I have an Intravenous (I.V.).	.526
6	What to do if I have chest pain.	.420

"why he has an intravenous" which is a routine procedure for these patients, "what test will be done to confirm the diagnosis" and "how to summon a nurse if chest pain occurs". Control and elimination of chest pain is of paramount importance following an M.I., so this information is always conveyed to the patient. These items all fit well together for a factor dealing with initial orientation to the unit.

This factor was only slightly similar to Factor IX from patient responses entitled PROTOCOL. It simply dealt with tests being done to confirm diagnoses and information on usual nursing routines and policies. Other items concerning initial orientation appeared in several other factors, but not in one single factor as with the nursing group. This is not unusual, as patients on admission to the CCU are given basic information but due to physical discomfort, a strange, new environment and/or fear of dying. little of this basic information is retained. The nurses, however, are very familiar with admission procedure and orientation so would be expected to identify a factor dealing with this type of information.

FACTOR VII. GENERAL REHABILITATION

Factor seven contains five items which loaded above .40. This factor deals with general information on various topics which relate to cardiac rehabilitation. These items are listed in Table 23.

Table 23

Factor VII - General Rehabilitation

Item	Content	Loading
8	What my heart looks like and how it works.	.477
10	What happens when someone has a heart attack.	.488
22	General rules about taking medications.	.850
23	Why I am taking each medication.	.419
26	General rules about eating.	.557

This factor includes information on several aspects such as anatomy of the heart, pathology underlying a heart attack and general informaton on diet and medications. Though drawing from a variety of subjects, these items could combine to form a fairly comprehensive overview of cardiac rehabilitation. Because nurses would view coronary education and rehabilitation from a more objective overall perspective, these items would fit well into a factor on general rehabilitation. Patients, however, during a time of stress such as this might for simplicity's sake view their educational needs in a more specific light, dealing with one subject at a time. This pattern was indeed seen in the factor analysis of patient responses. They identified factors dealing with more specific topics such as diet, medications and activity progression following a heart attack.

FACTOR VIII. LONG-RANGE PLANNING

Factor eight had three items with a relatively high loading. These factors are listed in Table 24. When a patient is discharged following a heart attack he is taught how to check his pulse. This is seen as a method of monitoring both exercise progression and adequacy of medication regimen. Patients are given a target heart rate and instructed to exercise to this point to prevent overworking or underworking the heart as it heals. Pulse rate is also useful in assessing the effectiveness of

Table 24

Factor VIII - Long-Range Planning

Item	Content	Loading
37	How to take a pulse.	.799
39	Signs and symptoms of congestive heart failure.	.614
43	Where my family can go to learn C.P.R.	.592

several commonly used medications designed to lower pulse and blood pressure to help the heart to heal. Patients are instructed concerning a normal pulse rate and using this as a guide for contacting his physician if problems with specific medications occur. For these reasons, checking the pulse becomes one of the basics of long-range recovery. Being aware also of the signs and symptoms of congestive heart failure would also be useful in long-range recovery as prompt treatment of these symptoms can frequently avert major problems. Establishing how and where a family can learn C.P.R. would be an obvious asset to patient's continued survival should a second heart attack occur. For these reasons, the three items discussed would fit well into one factor.

FACTOR IX. IMMEDIATE CONCERNS

Factor nine consists of two items. This factor includes information on IMMEDIATE CONCERNS and is listed in Table 25.

On being asked what concerns are voiced most frequently by patients most nurses who work with acute M.I. patients would identify concerns about not being able to get up and walk about and those about why chest pain occurs. Perhaps the most dramatic restriction placed on patients in the CCU is activity restriction. Patients are confined to bed, connected to a monitor cable which makes any movement beyond the bed impossible, and not allowed to

Table 25

Factor IX - Immediate Concerns

Items	Content	Loading
4	Why my activity is limited.	.770
7	Why I have chest pain.	.727

even go to a bathroom. To a previously healthy person with no limits on his activities, this is a major change. Frequent concerns and questions would not be uncommon. Similarily, to a person who has been healthy and felt well, the presence of chest pain is an ominous and frightening experience. Again, one would expect several concerns to be expressed in this area as well.

FACTOR X. PREVENTION

Factor ten contained four items which loaded highly. These items are presented in Table 26. The items included in this factor involve the need for information to prevent future complications as a result of heart disease. Information about diet restrictions and reasons for limited physical activity could be seen as necessary to prevent a subsequent heart attack. Also, an awareness of the signs and symptoms of common complications of coronary artery disease might facilitate early intervention to avert potentially serious problems.

FACTOR XI. RECOVERY I

Factor eleven contained two items which had relatively high loadings and appear in Table 27. Items in this factor center around the RECOVERY process following discharge. Both potential side effects of medication regimen and rationale for further testing are addressed.

Table 26

Factor X - Prevention

Item	Content	Loading
30	What my diet restrictions are, if any.	.402
32	Why I am not able to do as much physically as before.	.404
38	The signs and symptoms of angina and heart attack.	.827
39	The signs and symptoms of C.H.F.	.493

FACTOR XII. RECOVERY II

Factor twelve contains two items which loaded relatively highly. The items again focus on recovery and include the items listed in Table 28.

The two items in this factor look at information on the healing process of the heart after a heart attack as well as advice on when it is appropriate to seek medical help.

Comparison of Two Groups

Factor Analysis

Nurse Group. In examining the factors identified with both patients and nurses, one sees some similarities but some rather striking differences, not unexpected because of different training and different points of view of the two groups. More factors were found to have eigenvalues above 1.0 with the nursing group indicating a broader, less specific perspective and four of the last five factors seemed to deal with general rehabilitation and recovery following a heart attack. The factors identified from nursing responses seemed, as expected, more general than those from patient responses and approached education of coronary patients from a more general global perspective. This less specific approach by nurses may be due to a number of things. Nurses approach the education of cardiac patients from an objective viewpoint and may assume all aspects of their education to be valuable. They may

Table 27

Factor XI - Recovery I

Item	Content	Loading
24	What are the side effects of each medication.	.725
42	The reason for further testing after I go home.	.401

Table 28

Factor XII - Recovery II

Item	Content	Loading
11	How the heart heals.	.722
40	When to call the doctor.	.407

individualize their teaching to meet the specific needs of patients but this questionnaire dealt with their perception of learning needs of coronary pateints in general. None of the factors identified by the nursing respondents dealt with just one subject. They tended to have a more general theme such as overall recovery or long-range planning and incorporated information from different areas such as diet, medications, and activity progression.

Psychological support was also not confined to one factor but diffused throughout several factors. Again, nurses incorporated psychological support into all aspects of their nursing care and patient education, so may not see this as an end in itself but more a means to an end.

Patient Group. Factor analysis of patient responses identified ten factors with eigenvalue over 1.0. In examining these factors, one sees more specific subjects covered by each factor. For example, Factor II dealt only with nutritional information, from general information on eating to what changes to make and how to adopt dietary changes to his own lifestyle. This more specific, more defined approach to education as perceived by patients may be attributed to a number of reasons. Patients were questioned about their educational needs after they had actually experienced a heart attack. They were coming from a very personal, subjective position and might well rank importance of learning needs according to their own specific risk factors such as obesity, inactivity, high serum cholesterol and their own specific situation with respect to medication prescription. Patient responses may have produced better defined factors for simplicity sake. Patients may feel learning about one specific subject at a time a more reasonable and attainable objective than fragments from many areas.

Pearson Product Moment Correlation Coefficients

Twelve factor scores corresponding to twelve nursing factors were obtained and, using the Pearson Product Moment Correlation Coefficients, were then compared with the original subscales as outlined by the developers of this instrument, Gerard and Peterson, for similarities and variations.

The subscale of NEEDS correlated highly with Factors three, SELF-HELP, five, GENERAL EXPLANATION and six, INITIAL ORIENTATION. This particular subscale includes general information on admission routine and CCU policy. The greatest similarity was to Factor VI which, in fact, was entitled INITIAL ORIENTATION and included four of the six items included in this subscale. Factors three and five also dealt with general information on admission to CCU but were less specific and included other items such as "reason for reduced activity level", "further testing to be done" and "management of stress".

The second subscale on anatomy correlated highly with several factors including Factors one, CAUSE, four, GENERAL INFORMATION, six, INITIAL ORIENTATION, seven, GENERAL REHABILITATION, eight, LONG-RANGE PlLANNING nine, IMMEDIATE CONCERNS and twelve, RECOVERY II. This subscale included information on "reason for the chest pain", "reason for a heart attack", "what the heart looks like", "how it works and how it heals" and "why irregularities in heart beat may occur". It appears that items from this subscale were fairly diffusely scattered among the factors identified. No one factor dealt specifically with anatomy and physiology. As one examines the original subscale, one sees some rather vague statements that could well fit into other subscales. For example, "what causes a heart attack" may be more appropriate in the subscale on risk factors. "Why I have a chest pain" may better fit with introduction to CCU. These somewhat obscure statements may contribute to the lack of similarity between original and identified factors.

The subscale on psychological information showed a high correlation to Factors one, CAUSE, three, SELF-HELP and four, GENERAL INFORMATION. This subscale included information items on "psychological impact of a serious illness", "the value of expressing feelings" as well as "the role of stress in heart disease and how to control it". The factors found to correlate highly with this subscale seem to include psychological items as they relate to other areas. Stress is seen more as a risk factor and controlling it is seen as prevention. The nurses included the normal psychological response and the need to ventilate feelings with the factor on general information. Again, nurses may view the psychological aspect of education as part of general information because it involves so many facets of their care and treatment.

The subscale on risk factors correlated highly with Factors one, CAUSE and three, PREVENTION. This subscale includes exclusively items concerning risk factors from "what the term means", "which ones have caused the disease", "how these risk factors affect the heart" and "how they can be controlled or eliminated". Factor one entitled CAUSE addresses the issue of risk factors as to explanation, identification and effect on the heart. It also goes on to deal with one specific risk factor, diet, following a logical progression in doing so. Factor three, PREVENTION, looks at risk factors, specifically stress from a preventive viewpoint. Information on reduction of stress to minimize the chances of another heart attack fit into this factor.

The subscale on medication includes information specifically related to "what medications are being taken", "why they are taken", "possible side effects" and "plan of action should problems occur". Again, the four items included in this subscale were found scattered between Factors two ACTIVITY PROGRESSION, seven GENERAL REHABILITATION and eleven RECOVERY I, none of which dealt specifically with medication information. This information was simply seen as a part of general rehabilitation and recovery following a heart attack. The subscale on diet included general information on eating, the impact of diet on heart disease, cholesterol and triglyceride and heart disease, and diet restrictions. This subscale again correlated with three identified factors none of which deal specifically with diet. Factors one, three and seven included information on etiology, prevention and general rehabilitation so again diet was simply seen as one aspect of these larger topics.

The subscale on physical activity included information on physical limitations, activity progression and resumption of sexual activity. This subscale was found to correlate closely with Factor two only on ACTIVITY PROGRESSION. There is a strong similarity between these two as every item included in this subscale can be found in factor two. Perhaps because rest and activity progression are so much a part of nursing care as well as an important aspect of patient education, nurses felt this information warranted a category by itself.

The subscale of miscellaneous information included information on "taking the pulse", "signs and symptoms of

The subscale of miscellaneous information included information on "taking the pulse", "signs and symptoms of angina and CHF", "when to call a doctor", "what and why further testing is to be done" and "where C.P.R. can be learned". This subscale was found to correlate highly with Factor one on GENERAL REHABILITATION, Factor five on GENERAL EXPLANATION and Factor eight on LONG-RANGE PLANNING. This subscale was more a catch-all category which seem to tie up somewhat unrelated items so it is not surprising that several factors involving very general subjects correlated to this subscale.

Summary

The forty-three items on the questionnaire as responded to by nurses were subjected to factor analysis and twelve factors were identified as having eigenvalues above 1.0. These factors were then compared to the eight subscales defined by the original researchers and some rather unexpected results were found.

There seemed little similarity between the factors and subscales among nurse responses. Nurses tended to view education of coronary patients in a more general way so items in each subscale were quite diffuse among the various factors. There was much more similarity between factors and subscales for the patient group. This finding suggests validity in relation to the use of this instrument with patient groups, but not with the nursing group. This finding is evident in Table 29 which compares common items found between the various subscales with factors identified with factor analysis of the nurse and patient responses.

Table 29

Comparison of Patient and Nurse Factors with Subscales

			Patient		Nurse	
Major Topic	Subscale	Items	Factor	Items	Factor	Items
Introductory Information	1	1,2,3, 4,5,6	VII	2,3,4, 5	VI	1,2,3, 6
Anatomy and Physiology	2	7,8,9, 10,11, 12	VI	7,8,9, 10,11		
Psychological Information	3	13,14, 15,16, 17	IV	13,14, 16,17	III	15,16, 17
Risk Factors	4	18,19, 20,21	III	18,19, 20,21	I	18,19, 21
Medication Information	5	22,23, 24,25	I	22,23, 24,25		
Dietary Information	6	26,27, 28,29, 30,31	II	26,27, 28,29, 30,31		
Activity Progression	7	30,33, 34,35, 36	V	33,34, 35,36	II	32,33, 34,35, 36
Miscellaneous Information	8	37,38, 39,40, 41,42, 43	I	37,41, 42,43	V	40,41, 42

CHAPTER V

Conclusions and Recommendations

Patient education has become an accepted part of the treatment for coronay artery disease. Traditionally, these programs have been designed and developed by health care workers with virtually no input from the client himself. A review of the literature on adult education would seem to disclose some characteristics unique to the adult learner. Adults tend to learn material they feel will be of benefit to them, learn what they want to know and prefer to have some input into what is being taught. The purpose of this study was to examine the educational needs of cardiac patients as they are perceived by both patients and nurses. The researcher also attempted to discover from whom patients expected to receive this information.

A descriptive research design involving two independent samples of 60 patients following a heart attack and 60 nurses employed in cardiac nursing was used. Two large metropolitan teaching hospitals were used for the study. Data were collected from the cardiac patients following their transfer from the acute coronary care setting to the progressive coronary care unit using the Cardiac Patient Learning Needs Inventory (CPLNI), a questionnaire containing 43 learning needs statements developed by Gerard and Peterson (1984). A five point Likert-type scale measured the importance of learning needs as perceived by the subject. One open-ended question sought to identify additional learning needs experienced by the patients not included in the original questionnaire.

The same questionnaire was used to examine the importance of various learning needs of coronary patients as perceived by cardiac nurses. Patients were also asked to complete the Expected Educator Tool in an attempt to ascertain from whom patients expected to receive this information. Descriptive statistics were used to analyze the results. Frequencies and percentage distributions were used to analyze the demographic information received from the Patient Characteristic and Nurse Characteristic Tool. Frequencies were also used to examine the information received on the Expected Educator Tool. The Pearson Product Correlation technique was also used to analyze the patient and nurse responses to the Cardiac Patients Learning Needs Inventory. The mean scores of responses to the various subscales of the questionnaire were broken down according to the independent variables for each group and from a comparison of these means, some conclusions were made. Factor analysis was performed on the responses to the rating scale to identify major factors or components of learning needs that were being measured. The various factors identified from responses from both groups were examined and compared to the eight subscales developed by the original investigators for similarities and differences.

Findings

Patients and nurses saw the education of coronary patients from different viewpoints. Nurses tended to approach the education of patients following a heart attack from a broader, more general perspective. The objective approach of this group leads to a less specific, less defined attitude while the patients group tended to perceived the educational needs from a more personal, subjective view. They tended to look at specific topics individually while nurses looked at overall recovery and rehabilitation.

Factor analysis also would indicate that the Cardiac Patients Learning Needs Inventory appears to be a relatively strong measure of patients perceived learning needs, but a less valid measure of patient educational needs as nurses perceive them. The use of this instrument gave rise to other considerations. One must wonder whether actual learning needs of coronary patients was indeed being measured or simply what patients did not know to this point. This limitation should be kept in mind with further use of the instrument and interpretation of the results.

Implications for Nursing Practice

The results of the Expected Educator Tool indicate that in this study nurses were not seen as teachers, except in combination with physicians. With the exception of items pertaining strictly to nursing care and routine, none of the items were seen as being nurses' responsibility to teach. Interestingly enough, other disciplines were seen as educators and certain areas of information were seen as being taught by such professionals as dieticians and pharmacists without assistance from physicians. The results would suggest that nurses are seen more as caregivers involved with meeting physical needs than with education of these patients. It may be that informal teaching done by nurses in the hospital setting is not seen as actual teaching by the patients. To enhance this professional recognition, nurses should perhaps make educational sessions separate from nursing care activities and identify them as such. Informing the patient that his nurse is responsible for meeting his educational needs as well as physical needs and that she is a valuable and accessible resource person for any aspect of coronary teaching may also enhance the image of the nurse as educator.

Another implication for nursing practice that this study makes is the usefulness of incorporating a learning needs assessment tool into the educational plan for patients following a heart attack. Information on the adult learner would suggest that involvement by the patient in development of his own educational program may indeed enhance the effectiveness of the program.

Implications for Nursing Education

Most nursing education program today promote an holistic approach to patient care. The nurse is responsible for all aspects of patient care, including education. According to the Self-Care Framework by Orem, nursing is indicated when a deficit is identified between the client's ability to perform self-care and the therapeutic self-care demand. If lack of knowledge prevents the patients from performing self-care, the nurse should move to the supportive educative system to provide this knowledge through teaching. This role as teacher must be fostered and developed throughout the student's education to allow her the skills, the knowledge and the self confidence to fulfill this vital aspect of nursing care.

Recommendations for Further Research

Although this investigation fulfilled the broad objective of exploring learning needs of coronary patients as they are perceived by patients and by CCU nurses, further research is necessary to validate the findings and to explore this relationship more fully. It is important that any future research comparing learning needs of cardiac patients as they perceive them or as nurses perceive them address the limitations associated with this study. Based upon the results and experience of this investigator, the following specific recommendations are made.

1. In a replication of this study, larger sample sizes should be used to allow generalizability of the findings beyond this setting.
2. This study involved all patients admitted to the centers used in the study following a heart attack who consented to participate. Future research should include only patients admitted with first time heart attacks in order to delineate learning needs further.
3. Further research which explored the learning needs of coronary patients at various stages of recovery would be interesting to see if these learning needs do indeed change and in what ways they change.
4. Development of a learning needs inventory to be used in conjunction with a teaching program for coronary patients would be useful with some additional research to evaluate the effect of this tool on the success of the teaching program.

In light of the above recommendations, additional research which further explores the learning needs of coronary patients would provide valuable groundwork for improving the effectiveness of new and existing teaching programs for this patient population.

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APPENDIX A

Cardiac Patients Learning Needs Inventory

Please rate each of the following informational items as to the degree of importance it has for you with heart disease. Please check one columb for each item.

	Degree of Importance				
I need to know: Introduction to the CCU	Not Important	Somewhat Important	Moderately Important	Important	Very Important
1. Why I am in the coronary care unit?					
2. What tests are done to determine if I have had a heart attack?					
3. Why do I have an intravenous line (I.V.)?					
4. Why my activity is limited?					
5. What the usual nursing routines and coronary care unit policies are?					
6. What to do if I have chest pain?					
Anatomy and Physiology					
7. Why I have chest pain?					
8. What my heart looks like and how it works?					
9. What causes a heart attack?					
10. What happens when someone has a heart attack?					

(continued)

APPENDIX A (continued)

I need to know:	Not Important	Somewhat Important	Moderately Important	Important	Very Important
11. How the heart heals.					
12. Why my heartbeat may be irregular or I may have "skipped beats"?					
Psychological Factors					
13. The normal psychological response to having a serious illness.					
14. The importance of talking to someone about my feelings.					
15. What effect stress has on my heart?					
16. What I can do to reduce stress while in the hospital?					
17. What I can do to reduce stress when I go home?					
Risk Factors					
18. What the "risk factor" means?					
19. Which risk factors may contribute to the onset of my heart disease?					
20. What I can do to decrease chances of another heart attack or a heart attack?					

(continued)

APPENDIX A (continued)

I need to know:	Not Important	Somewhat Important	Moderately Important	Important	Very Important
21. How these risk factors affect my heart?					
Medication Information					
22. General rules about taking medications.					
23. Why I am taking each of my medications?					
24. What the side effects of each medication are?					
25. What to do if I have problems with my medication?					
Diet Information					
26. General rules about eating.					
27. How diet affects my heart disease?					
28. What the words "cholesterol" and "triglycerides" mean?					
29. What foods contain cholesterol and triglycerides?					
30. What my diet restrictions are, if any?					

(continued)

APPENDIX A (continued)

I need to know:	Not Important	Somewhat Important	Moderately Important	Important	Very Important
31. How to adapt the recommended diet to my lifestyle?					
32. Why I am not able to do as much physically as I was before my heart attack?					
33. General guidelines for physical activity.					
34. What my physical activity restrictions are, if any?					
35. How to tell if I can increase my activity?					
36. When I can engage in sexual activity?					
Other Pertinent Information					
37. How to take my pulse?					
38. The signs and symptoms of angina and a heart attack?					
39. The signs and symptoms of congestive heart failure?					
40. When to call the doctor?					
41. If any other tests will be done after I leave the hospital?					

(continued)

APPENDIX A (continued)

I need to know:	Not Important	Somewhat Important	Moderately Important	Important	Very Important
42. The reason for further testing after I go home?					
43. Where my family can go to learn C.P.R.?					
44. Any other item not listed here, please specify and rate.					

APPENDIX B

Educator Preference

For each of the following informational items, please indicate who you feel will be able to give you this information. You may check more than one column. If you check the "other" column, please specify who you are referring to.

Information about:	Dietician	Nurse	Pharmacist	Doctor	Other
Why I am in the coronary care unit?					
What tests are done to determine if I have had a heart attack?					
Why I have an intravenous line while in the coronary care unit?					
Why my activity in the hospital is limited?					
What the usual nursing routines and coronary care unit policies are?					
What to do if I have chest pain while in the coronary care unit?					
Why I have chest pain?					
What my heart looks like and how it works?					
What causes a heart attack?					
What happens when someone has a heart attack?					
How the heart heals?					

(continued)

APPENDIX B (continued)

Information about:	Dietician	Nurse	Pharmacist	Doctor	Other
Why my heartbeat may be irregular or I may have "skipped beats"?					
The normal phsychological response to having a serious illness?					
The importance of talking to someone about your feelings and thoughts.					
How stress affects my heart?					
What I can do to reduce stress when I am in the hospital?					
What I can do to reduce stress when I am at home?					
What the term "risk factor" means?					
Which risk factors may have contributed to the onset of my heart disease?					
What I can do to decrease chances of having another heart attack, or of having a heart attack?					
How these risk factors affect my heart?					
General rules about taking medications?					
Why I am taking each of my medications?					

(continued)

APPENDIX B (continued)

Information about:	Dietician	Nurse	Pharmacist	Doctor	Other
What the side effects of each medication are?					
What to do if I have problems with my medications?					
General rules about eating?					
How diet affects my heart disease?					
What the words "Cholesterol" and "Triglycerides" mean?					
What my diet restrictions are, if any?					
How to adapt the recommended diet to my lifestyle?					
What I am not able to do as much physically as I was before my heart attack?					
General guidelines for physical activity?					
What my physical activity restrictions are, if any?					
How to tell when I can increase my physical activity?					
When I can engage in sexual activity?					
How to take my pulse?					

(continued)

APPENDIX B (continued)

Information about:	Dietician	Nurse	Pharmacist	Doctor	Other
The signs and symptoms of angina and a heart attack?					
When to call the doctor?					
If any other tests will be done after I leave the hospital?					
The reason for further testing after I go home?					
Where my family can go to learn C.P.R.?					

Additional Comments:-

APPENDIX C

Patient Characteristic Tool

Date of Interview: Hospital:

1. Age:

2. Sex:

3. Marital status:

4. Highest educational level achieved:

5. Previous or present occupation:

6. Previous hospitalizations for cardiac illness:

   If yes, how many?

7. Peel index score: _______

APPENDIX D

Peel Index Score Sheet

Subject:

Age:

Date of onset:

Date of admission or assessment:

TOTAL PATIENT SCORE:

	Score		Score	Patient
Sex and age:				
Men, 54 or under	0	Women, 64 or under	2	
55-59	1	65 or over	3	
60-64	2			
65 or over	3			
Previous History:				
Previous cardiac infarct			6	
Other cardiovascular disease of history of exertional dyspnea			3	
Angina only			1	
No cardiovascular disease			0	
Shock: Absent			0	
Mild: Present at or soon after attack (pallor, faintness, sweating, nausea, vomiting; subsiding spontaneously in 15-30 minutes)			1	
Moderate: Present on admission or at attack but subsiding with rest and sedation			5	
Severe: Persisting despite rest and sedation			7	
Failure:				
Absent			0	
Few basilar rales only			1	
Any one or more of the following: breathlessness, acute pulmonary edema, orthopnea or dyspnea, gallop rhythm, liver enlargement, edema or jugular venous distention			4	

APPENDIX D (continued)

Score	Score	Patient
Electrocardiogram:		
Normal QRS: Changes confined to R-T segment or T wave	1	
QR complexes	3	
QS complexes or bundle-branch block	4	
(If no electrocardiogram obtained, mark r)		
Rhythm:		
Normal sinus rhythm		
Any one or more of the following: A.F., Flutter, Proxismal Atrial Tachycardia, frequent Ventricular Etopics, nodal rhythm or heart block	4	

APPENDIX E

Nurse Characteristic Tool

Date of interview: Hospital:

1. Age:

2. Year of graduation:

3. Number of years of coronary care experience:

4. Number of years of nursing experience:

APPENDIX F

Expected Educator of Various Items According to Independent Variables

Item	Educator	Sex		Age			Marital Status		Education Level			Previous History		Hospital	
		M	F	34-55	56-65	66+	Married	Not Married	Grade 9 or less	Grade 10-12	Post secondary	Yes	No	A	B
W01 Why I am in the C.C.U.	Nurse	7	1	1	2	5	7	1	4	2	2	2	6	4	4
	Doctor	41	11	13	25	14	43	9	15	24	11	9	43	26	26
W02 What tests will be done	Nurse	4	2	2	3	1	4	2		2	4	1	5	2	4
	Doctor	44	10	12	24	18	46	8	19	24	11	10	44	28	26
W03 Why I have an IV	Nurse	33	7	7	18	15	34	6	13	17	10	10	30	22	18
	Doctor	15	5	7	9	4	16	4	6	9	5	1	19	8	12
W04 Why my activity is limited	Nurse	25	5	8	13	9	25	5	8	15	7	6	24	13	17
	Doctor	21	7	6	12	10	23	5	11	10	7	5	23	17	11
	Other	2			2		2			1	1		2		2
W05 What the usual nursing routines and CCU policies are	Nurse	44	9	12	24	17	45	8	17	22	14	11	42	25	28
	Doctor	4	3	2	3	2	5	2	2	4	1		7	5	2
W06 What to do if I have chest pain	Nurse	35	7	9	18	15	35	7	13	17	12	8	34	22	20
	Doctor	13	5	5	9	4	15	3	6	9	3	3	15	8	10
W07 Why I have chest pain	Nurse	9	1	2	3	5	9	1	4	2	4	1	9	4	6
	Doctor	39	11	12	24	14	41	9	15	24	11	10	40	26	24
W08 What my heart looks like	Nurse	11	5	3	8	5	14	2	5	7	4	7	9	7	9
	Doctor	36	6	11	17	14	35	7	14	18	10	4	38	22	20
	Other	1	1		2		1	1		1	1		2	1	1

(continued)

APPENDIX F (continued)

Expected Educator of Various Items According to Independent Variables

Item	Educator	Sex		Age			Marital Status		Education Level			Previous History		Hospital	
		M	F	34-55	56-65	66+	Married	Not Married	Grade 9 or less	Grade 10-12	Post secondary	Yes	No	A	B
W09 What causes a heart attack	Nurse	7	2	2	4	3	8	1	3	5	1	2	7	3	6
	Doctor	41	9	12	22	16	42	8	16	21	13	9	41	26	24
	Other		1		1			1			1		1	1	
W10 What happens when someone has a heart attack	Nurse	8	4	1	5	6	10	2	5	7		2	10	5	7
	Doctor	40	7	13	21	13	40	7	14	19	14	9	38	24	23
	Other		1		1			1			1		1	1	
W11 How the heart heals	Nurse	8	3	1	6	4	10	1	4	6	1	3	8	4	7
	Doctor	40	8	13	20	15	40	8	15	20	13	8	40	25	23
	Other		1		1			1			1		1	1	
W12 Why my heartbeat may be irregular or why I may have skipped beats	Nurse	10	3	2	6	5	9	4	4	6	3	2	11	2	11
	Doctor	38	9	12	21	14	41	6	15	20	12	9	38	28	19
W13 Normal psychological response to a serious illness	Nurse	10	3	5	3	5	11	2	2	7	4		13	3	10
	Doctor	34	9	9	22	12	36	7	15	19	9	10	33	25	18
	Other	4			2	2	3	1	2		2	1	3	2	2
W14 The importance of talking to someone about my feelings	Nurse	12	7	4	6	9	14	5	8	8	3	2	17	8	11
	Doctor	21	5	6	15	5	22	4	5	13	8	4	22	15	11
	Other	15		4	6	5	14	1	6	5	4	5	10	7	8
W15 What effect stress has on my heart	Nurse	7	4	1	6	4	8	3	3	7	1	3	8	5	6
	Doctor	37	7	12	18	14	39	5	15	19	10	8	36	23	21
	Other	4	1	1	3	1	3	2	1		4		5	2	3

(continued)

APPENDIX F (continued)

Expected Educator of Various Items According to Independent Variables

Item	Educator	Sex		Age			Marital Status		Education Level			Previous History		Hospital	
		M	F	34-55	56-65	66+	Married	Not Married	Grade 9 or less	Grade 10-12	Post secondary	Yes	No	A	B
V16 What I can do to reduce stress while in hospital	Nurse	20	8	9	15	12	29	7	11	15	10	9	27	21	15
	Doctor	15	4	5	9	5	16	3	5	10	4	1	18	9	10
	Other	5			3	2	5		3	1	1	1	4		5
V17 What I can do to reduce stress at home	Nurse	12	6	4	7	7	13	5	5	9	4	3	15	10	
	Doctor	27	6	7	16	10	30	3	11	14	8	8	25	17	16
	Other	9		3	4	2	7	2	3	3	3		9	3	6
V18 What the term Risk Factor means	Nurse	13	2	6	5	4	13	2	4	8	3	2	13	7	8
	Doctor	34	10	8	22	14	36	8	14	18	12	8	36	22	22
	Other	1				1	1		1			1		1	
V19 Which risk factors contribute to the onset of my heart	Nurse	3	1	1	1	2	4		1	2	1		4	1	3
	Doctor	43	11	12	25	17	44	10	16	24	14	10	44	29	25
	Dietician	1			1		1		1			1			1
	Other	1		1			1		1				1		1
V20 What I can do to decrease chances of another heart attack	Nurse	3	2	2	1	2	4	1	1	2	2		5	1	4
	Doctor	44	10	11	26	17	45	9	17	24	13	11	43	29	25
	Other	1		1			1		1				1		1
V21 How these risk affect my heart	Nurse	8		3	3	4	9	1	4	3	3	2	8	4	6
	Doctor	38	2	10	24	14	39	9	13	23	12	8	40	25	23
	Dietician	1	10	1			1		1				1		1
	Other	1				1	1		1			1		1	
V22 General rules about taking medications	Nurse	17	2	5	10	4	17	2	3	7	9	4	15	9	10
	Doctor	21	6	7	10	10	21	6	12	12	4	2	25	13	14
	Pharm.	10	4	2	7	5	10	4	5	7	2	5	9	8	6

(continued)

APPENDIX F (continued)

Expected Educator of Various Items According to Independent Variables

Item	Educator	Sex		Age			Marital Status		Education Level			Previous History		Hospital	
		M	F	34-55	56-65	66+	Married	Not Married	Grade 9 or less	Grade 10-12	Post secondary	Yes	No	A	B
W23 Why I am taking each of my medications	Nurse	13	3	3	9	4	14	2	4	8	4	3	13	8	8
	Doctor	27	7	9	13	12	28	6	11	14	9	5	29	18	16
	Pharm.	8	2	2	5	3	8	2	4	4	2	3	7	4	6
W24 What the side effects of each medication are	Nurse	10	2	2	6	4	9	3	6	4	2	3	9	7	5
	Doctor	22	4	10	9	7	22	4	9	11	6	1	25	11	15
	Pharm.	16	6	2	12	8	19	3	4	11	7	7	15	12	10
W25 What to do if I have problems with my medications	Nurse	9	1	3	4	3	8	2	6	3	1	3	7	4	6
	Doctor	26	9	8	15	14	29	8	11	14	12	5	32	20	17
	Pharm.	11	2	3	8	2	13		2	9	2	3	10	6	7
W26 General rules about eating	Nurse	1	2	1		2	1	2	1	2			3		3
	Doctor	3		1	2		2	1	2	1		1	2	2	1
	Dietician	44	10	12	25	17	47	7	16	23	15	10	44	28	26
W27 How diet affects my heart disease	Nurse	1	3			4	2	2	3	1			4	2	2
	Doctor	7	2	3	3	3	7	2	5	3	1	1	8	4	5
	Dietician	40	7	11	24	12	41	6	11	22	14	10	37	24	23
W28 What the words cholesterol and triglyceride mean	Nurse	6	2	2	4	2	5	3	2	5	1	1	7	4	4
	Doctor	13	3	6	6	4	14	2	8	5	1	2	14	9	7
	Dietician	27	6	6	14	13	29	4	9	15	9	8	25	16	17
	Pharm.	1			1		1				1		1		1
	Other	1	1		2		1	1		1	1		2	1	1
W29 What foods contain cholesterol and triglyceride	Nurse	5	2	1	4	2	4	3	2	4	1	1	6	4	3
	Doctor	14	3	6	6	5	15	2	8	6	3	3	14	9	8
	Pharm.	1			1		1				1		1		1
	Dietician	27	6	7	14	12	29	4	9	15	9	7	26	16	17
	Other	1	1		2		1	1		1	1		2	1	1

(continued)

APPENDIX F (continued)

Expected Educator of Various Items According to Independent Variables

Item	Educator	Sex		Age			Marital Status		Education Level			Previous History		Hospital	
		M	F	34-55	56-65	66+	Married	Not Married	Grade 9 or less	Grade 10-12	Post secondary	Yes	No	A	B
W30 What may diet restrictions are, if any	Nurse	2	1	2		1	1	2	1	2			3		3
	Doctor	11	3	4	5	5	12	2	7	4	3	3	11	9	5
	Dietician	35	8	8	22	13	37	6	11	20	12	8	35	21	22
W31 How to adapt the recommended diet to my lifestyle	Nurse	1		1			1			1			1		1
	Doctor	6	3	3	1	5	4	5	6	3		1	8	3	6
	Dietician	39	9	9	25	14	43	5	13	20	15	10	38	26	22
	Other	2		1	1		2			2			2	1	1
W32 Why I am not able to do as much physically as I was before my heart attack	Nurse	4	1	1	1	3	5		2	2	1		5	2	3
	Doctor	43	11	13	26	15	44	10	16	24	14	11	43	28	26
	Other	1				1	1		1				1		1
W33 General guidelines for physical activity	Nurse	6	2	3	3	2	6	2	2	3	3		8	1	7
	Doctor	39	10	10	23	16	42	7	16	23	10	11	38	27	22
	Other	3		1	1	1	2	1	1		2		3	2	1
W34 What my physical activity restrictions are, if any	Nurse	6	2	1	4	3	6	2	3	3	2		8	2	6
	Doctor	39	10	12	22	15	42	7	15	23	11	11	38	26	23
	Other	3		1	1	1	2	1	1		2		3	2	1
W35 How to tell if I can increase my activity	Nurse	4	1	2	1	2	4	1	2	3			5		5
	Doctor	42	10	11	24	17	45	7	17	23	12	11	41	27	25
	Other	2	1	1	2		1	2			3		3	3	
W36 When I can engage in sexual activity	Nurse	4	2	1	3	2	4	2	3	1	2	1	5	1	5
	Doctor	44	9	13	24	16	46	7	15	25	13	10	43	28	25
	Other		1			1		1	1				1	1	

(continued)

APPENDIX F (continued)

Expected Educator of Various Items According to Independent Variables

		Sex		Age			Marital Status		Education Level			Previous History		Hospital	
Item	Educator	M	F	34-55	56-65	66+	Married	Not Married	Grade 9 or less	Grade 10-12	Post secondary	Yes	No	A	B
W37 How to take my pulse	Nurse	10	9	11	23	15	40	9	16	22	11	11	38	24	25
	Doctor	8	3	3	4	4	10	1	3	4	4		11	6	5
W38 The signs and symptoms of angina and a heart attack	Nurse	6		1	2	3	6		4	2		2	4	2	4
	Doctor	42	11	13	24	16	44	9	15	24	14	9	44	27	26
	Other		1		1			1			1		1	1	
W39. The signs and symptoms of congestive heart failure	Nurse	6		1	2	3	6		4	2		2	4	2	4
	Doctor	42	11	13	24	16	44	1	15	24	14	9	44	27	26
	Other		1		1			1			1		1	1	
W40 When to call the doctor	Nurse	5	1		3	3	5	1	3	2	1	1	5	1	5
	Doctor	34	9	8	21	14	36	7	11	22	10	10	33	23	20
	Other	9	2	6	3	2	9	2	5	2	4		11	6	5
W41 If any other tests will be done after I leave the hospital	Nurse	7	3	2	3	5	9	1	4	5	1	2	8	3	7
	Doctor	40	9	11	24	14	40	9	14	21	14	9	40	27	22
	Other	1		1			1		1				1		1
W42 The reason for further tests after I go home	Nurse	7	2	3	2	4	7	2	4	4	1	1	8	2	7
	Doctor	40	10	10	25	15	42	8	14	22	14	10	40	28	22
	Other	1		1			1		1				1		1
W43 Where my family can go to learn C.P.R.	Nurse	15	3	4	8	6	18		3	9	6	5	13	10	8
	Doctor	21	7	8	12	8	21	7	9	12	7	2	26	14	14
	Other	12	2	2	7	5	11	3	7	5	2	4	10	6	8

APPENDIX G

Research Consent Form (Nurse)

Learning Needs of Coronary Patients

This is to certify that I, ______________________________, have agreed to participate in a study being conducted by Marie Coffey, a graduate student in nursing, on learning needs of coronary patients. It is my understand that:

1) I will be answering a questionnaire regarding the learning needs I perceive coronary patients to have following a heart attack;
2) my participation in the study is voluntary and I may refuse to answer any question(s), or may withdraw from the study at any time with no consequences;
3) all responses to the questionnaire will be anonymous;
4) I will be able to know the results of the study once it is completed.

Signature ______________________

Witness ______________________

Date ______________________

APPENDIX G (continued)

Research Consent Form (Patient)

Learning Needs of Coronary Patients

This is to certify that I, ____________________________, have agreed to participate in a study being conducted by Marie Coffey, a graduate nursing student, on the learning needs of coronary patients. It is my understanding that:

1) I will be answering a questionnaire regarding the learning needs I experienced following a heart attack;
2) my participation in the study is voluntary and I may refuse to answer any question(s), or may withdraw from the study at any time with no consequences;
3) all responses on the questionnaire will be anonymous;
4) I may not necessarily directly benefit from participating in the study.

Signature ________________________

Witness ________________________

Date ________________________